

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of
David S. Terman

Serial No.: 09/751/708

Filed: December 28, 2000

For: COMPOSITIONS AND METHODS FOR TREATMENT OF NEOPLASTIC
DISEASE



Group Art Unit: 1635

Examiner:

STATEMENT IN ACCORDANCE WITH 37 CFR 1.821 (f)

Assistant Commissioner for Patents
Washington, D.C. 20231
BOX SEQUENCE

Sir:

I hereby state that the information recorded in computer readable form is
identical to the written (paper) sequence listing.

Respectfully submitted,

Date

2/26/02

David S. Terman

A handwritten signature in cursive script, appearing to read "David S. Terman".



09751703-030102 # 7

SEQUENCE LISTING <110> Terman, David S <120>
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ttt gga gct aat tat tat tat caa tgt tat ttt tct aaa aaa acg aat 624
Phe Gly Ala Asn Tyr Tyr Tyr Gln Cys Tyr Phe Ser Lys Lys Thr Asn

attaagcaat aaaaaataac catcgctaac tttggctggt ttcgatggtt aaatggttat 1362
 taatttaatc tttaatctaa aatagccacc gtcttttttaa cgggctcatt agggtaacat 1422
 gtttgcgcat gttgcccttt t 1443

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Thr Thr Ser Pro Leu Val Asn Gly Ser Glu Lys Ser Glu Glu Ile Asn
 20 25 30

Glu Lys Asp Leu Arg Lys Lys Ser Glu Leu Gln Gly Ala Ala Leu Gly
 35 40 45

Asn Leu Lys Gln Ile Tyr Tyr Tyr Asn Glu Lys Ala Lys Thr Glu Asn
 50 55 60

Lys Glu Ser His Asp Gln Phe Leu Gln His Thr Ile Leu Phe Lys Gly
 65 70 75 80

Phe Phe Thr Asn His Ser Trp Tyr Asn Asp Leu Leu Val Asp Phe Asp
 85 90 95

Ser Lys Asp Ile Val Asp Lys Tyr Lys Gly Lys Lys Val Asp Leu Tyr
 100 105 110

Gly Ala Tyr Tyr Gly Tyr Gln Cys Ala Gly Gly Thr Pro Asn Lys Thr
 115 120 125

Ala Cys Met Tyr Gly Gly Val Thr Leu His Asp Asn Asn Arg Leu Thr
 130 135 140

Glu Glu Lys Lys Val Pro Ile Asn Leu Trp Leu Asp Gly Lys Gln Asn
 145 150 155 160

Thr Val Pro Leu Glu Thr Val Lys Thr Asn Lys Lys Asn Val Thr Val
 165 170 175

Gln Glu Leu Asp Leu Gln Ala Arg Arg Tyr Leu Gln Glu Lys Tyr Asn
 180 185 190

Leu Tyr Asn Ser Asp Val Phe Asp Gly Lys Val Gln Arg Gly Leu Ile
 195 200 205

aaa gct aaa act gaa aat aaa gag agt cac gat caa ttt tta cag cat Lys Ala Lys Thr Glu Asn Lys Glu Ser His Asp Gln Phe Leu Gln His 60 65 70	483
act ata ttg ttt aaa ggc ttt ttt aca aat cat tca tgg tat aac gat Thr Ile Leu Phe Lys Gly Phe Phe Thr Asn His Ser Trp Tyr Asn Asp 75 80 85 90	531
tta tta gta gat ttt gat tca aag gat att gtt gat aaa tat aaa ggg Leu Leu Val Asp Phe Asp Ser Lys Asp Ile Val Asp Lys Tyr Lys Gly 95 100 105	579
aaa aaa gta gac tta tat ggt gct tat tat ggt tat caa tgt gcg ggt Lys Lys Val Asp Leu Tyr Gly Ala Tyr Tyr Gly Tyr Gln Cys Ala Gly 110 115 120	627
ggc aca cca aac aaa aca gct tgc atg tat ggt ggt gta acg tta cat Gly Thr Pro Asn Lys Thr Ala Cys Met Tyr Gly Gly Val Thr Leu His 125 130 135	675
gat aat aat cga ttg acc gaa gag aaa aaa gtg ccg atc aat tta tgg Asp Asn Asn Arg Leu Thr Glu Glu Lys Lys Val Pro Ile Asn Leu Trp 140 145 150	723
cta gac ggt aaa caa aat aca gta cct ttg gaa acg gtt aaa acg aat Leu Asp Gly Lys Gln Asn Thr Val Pro Leu Glu Thr Val Lys Thr Asn 155 160 165 170	771
aag aaa aat gta act gtt cag gag ttg gat ctt caa gca aga cgt tat Lys Lys Asn Val Thr Val Gln Glu Leu Asp Leu Gln Ala Arg Arg Tyr 175 180 185	819
tta cag gaa aaa tat aat tta tat aac tct gat gtt ttt gat ggg aag Leu Gln Glu Lys Tyr Asn Leu Tyr Asn Ser Asp Val Phe Asp Gly Lys 190 195 200	867
gtt cag agg gga tta atc gtg ttt cat act tct aca gaa cct tcg gtt Val Gln Arg Gly Leu Ile Val Phe His Thr Ser Thr Glu Pro Ser Val 205 210 215	915
aat tac gat tta ttt ggt gct caa gga cag aat tca aat aca cta tta Asn Tyr Asp Leu Phe Gly Ala Gln Gly Gln Asn Ser Asn Thr Leu Leu 220 225 230	963
aga ata tat aga gat aat aaa acg att aac tct gaa aac atg cat att Arg Ile Tyr Arg Asp Asn Lys Thr Ile Asn Ser Glu Asn Met His Ile 235 240 245 250	1011
gat ata tat tta tat aca agt taaacatggt agttttgaac acgtaatgtt Asp Ile Tyr Leu Tyr Thr Ser 255	1062
cagattatta tgaaccgaga ataatctgaa agttttacaag cagtaaaaaa agtatatgtg	1122
ctataatatg ctttgagcaa gttggataga tgggtggctat ctgagtataa ggaggtggtg	1182
cctatggtgg cattactgaa atcttttagaa aggagacgcc taatgattac aattagtagc	1242
aatggtgcag ttggttttat tccttattgac attgataggt ctagtaataca agcttattga	1302

tcgccttatg aaacgggata tattaaatTT atagaaaatg agaatagctt ttggtatgac 720
 atgatgcctg caccaggaga taaatttgac caatctaaat atttaatgat gtacaatgac 780
 aataaaatgg ttgattctaa agatgtgaag attgaagttt atcttacgac aaagaaaaag 840
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<210> 6 <211> 20 <212> DNA <213> Unknown <220> <223> Primer

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atatatgtat gtataagtaa ataagataa ttctataatt attgtatata actaataatt 180

acttcgacaa aaataatcta ttatccaaat attttagata ataaaaagtt tgtatggaat 240

tatgcttttag aggtgagcaa a atg aaa aaa aca gca ttt ata cta ctt tta 291
 Met Lys Lys Thr Ala Phe Ile Leu Leu Leu
 1 5 10

ttc att gcc cta acg tgg aca aca agt cca ctt gta aat ggt agc gag 339
 Phe Ile Ala Leu Thr Trp Thr Thr Ser Pro Leu Val Asn Gly Ser Glu
 15 20 25

aaa agc gaa gaa ata aat gaa aaa gat ttg cga aaa aag tct gaa ttg 387
 Lys Ser Glu Glu Ile Asn Glu Lys Asp Leu Arg Lys Lys Ser Glu Leu
 30 35 40

cag gga gca gct tta ggc aat ctt aaa caa atc tat tat tac aat gaa 435
 Gln Gly Ala Ala Leu Gly Asn Leu Lys Gln Ile Tyr Tyr Tyr Asn Glu
 45 50 55

80	85	90	
agc cct gct ttt aca aaa ggg gaa aaa gtt gac tta aac aca aaa aga			339
Ser Pro Ala Phe Thr Lys Gly Glu Lys Val Asp Leu Asn Thr Lys Arg			
95	100	105	
act aaa aaa agc caa cat act agc gaa gga act tat atc cat ttc caa			387
Thr Lys Lys Ser Gln His Thr Ser Glu Gly Thr Tyr Ile His Phe Gln			
110	115	120	
ata agt ggc gtt aca aat act gaa aaa tta cct act cca ata gaa cta			435
Ile Ser Gly Val Thr Asn Thr Glu Lys Leu Pro Thr Pro Ile Glu Leu			
125	130	135	140
cct tta aaa gtt aag gtt cat ggt aaa gat agc ccc tta aag tat ggg			483
Pro Leu Lys Val Lys Val His Gly Lys Asp Ser Pro Leu Lys Tyr Gly			
	145	150	155
cca aag ttc gat aaa aaa caa tta gct ata tca act tta gac ttt gaa			531
Pro Lys Phe Asp Lys Lys Gln Leu Ala Ile Ser Thr Leu Asp Phe Glu			
	160	165	170
att cgt cat cag cta act caa ata cat gga tta tat cgt tca agc gat			579
Ile Arg His Gln Leu Thr Gln Ile His Gly Leu Tyr Arg Ser Ser Asp			
	175	180	185
aaa acg ggt ggt tat tgg aaa ata aca atg aat gac gga tcc aca tat			627
Lys Thr Gly Gly Tyr Trp Lys Ile Thr Met Asn Asp Gly Ser Thr Tyr			
	190	195	200
caa agt gat tta tct aaa aag ttt gaa tac aat act gaa aaa cca cct			675
Gln Ser Asp Leu Ser Lys Lys Phe Glu Tyr Asn Thr Glu Lys Pro Pro			
205	210	215	220
ata aat att gat gaa ata aaa act ata gaa gca gaa att aat taa			720
Ile Asn Ile Asp Glu Ile Lys Thr Ile Glu Ala Glu Ile Asn			
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tttaccactt t			731
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Leu Ala Thr Thr Ala Thr Asp Phe Thr Pro Val Pro Leu Ser Ser Asn			
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Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp Asn Ile Lys Asp			
	35	40	45
Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe Thr Asn Ser Glu			
	50	55	60
Val Leu Asp Asn Ser Leu Gly Ser Met Arg Ile Lys Asn Thr Asp Gly			

Ala Cys Met Tyr Gly Gly Val Thr Leu His Asp Asn Asn Arg Leu Thr
130 135 140

Glu Glu Lys Lys Val Pro Ile Asn Leu Trp Ile Asp Gly Lys Gln Thr
145 150 155 160

Thr Val Pro Ile Asp Lys Val Lys Thr Ser Lys Lys Glu Val Thr Val
165 170 175

Gln Glu Leu Asp Leu Gln Ala Arg His Tyr Leu His Gly Lys Phe Gly
180 185 190

Leu Tyr Asn Ser Asp Ser Phe Gly Gly Lys Val Gln Arg Gly Leu Ile
195 200 205

Val Phe His Ser Ser Glu Gly Ser Thr Val Ser Tyr Asp Leu Phe Asp
210 215 220

Ala Gln Gly Gln Tyr Pro Asp Thr Leu Leu Arg Ile Tyr Arg Asp Asn
225 230 235 240

Lys Thr Ile Asn Ser Glu Asn Leu
245

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agc cct ttg ttg ctt gcg aca act gct aca gat ttt acc cct gtt ccc 99
Ser Pro Leu Leu Leu Ala Thr Thr Ala Thr Asp Phe Thr Pro Val Pro
15 20 25

tta tca tct aat caa ata atc aaa act gca aaa gca tct aca aac gat 147
Leu Ser Ser Asn Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp
30 35 40

aat ata aag gat ttg cta gac tgg tat agt agt ggg tct gac act ttt 195
Asn Ile Lys Asp Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe
45 50 55 60

aca aat agt gaa gtt tta gat aat tcc tta gga tct atg cgt ata aaa 243
Thr Asn Ser Glu Val Leu Asp Asn Ser Leu Gly Ser Met Arg Ile Lys
65 70 75

aac aca gat ggc agc atc agc ttg ata att ttt ccg agt cct tat tat 291
Asn Thr Asp Gly Ser Ile Ser Leu Ile Ile Phe Pro Ser Pro Tyr Tyr

SECRET

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Thr	Val	Pro	Ile	Asp165	Lys	Val	Lys	Thr	Ser170	Lys	Lys	Glu	Val	Thr175	Val	
caa	gag	cta	gat	ctt	cag	gca	agg	cat	tat	tta	cac	gga	aaa	ttt	ggc	576
Gln	Glu	Leu	Asp180	Leu	Gln	Ala	Arg	His185	Tyr	Leu	His	Gly	Lys190	Phe	Gly	
tta	tat	aac	tca	gac	agc	ttt	ggc	ggc	aag	gtg	caa	aga	ggc	ttg	att	624
Leu	Tyr	Asn195	Ser	Asp	Ser	Phe	Gly200	Gly	Lys	Val	Gln	Arg205	Gly	Leu	Ile	
gtg	ttt	cat	tct	tct	gaa	ggg	tcc	acg	gta	agt	tat	gat	ttg	ttt	gat	672
Val	Phe210	His	Ser	Ser	Glu	Gly215	Ser	Thr	Val	Ser	Tyr220	Asp	Leu	Phe	Asp	
gct	caa	ggg	caa	tat	cca	gat	aca	tta	tta	aga	att	tac	aga	gat	aat	720
Ala225	Gln	Gly	Gln	Tyr	Pro230	Asp	Thr	Leu	Leu	Arg235	Ile	Tyr	Arg	Asp	Asn240	
aaa	act	att	aat	tca	gag	aac	ctc	cat	attg	attg	tgt	atttt	tata	caca	acttga	774
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Glu Lys Asp Leu Arg Lys Lys Ser Glu Leu Gln Arg Asn Ala Leu Ser
35 40 45

Asn Leu Arg Gln Ile Tyr Tyr Tyr Asn Glu Lys Ala Ile Thr Glu Asn
50 55 60

Lys Glu Ser Asp Asp Gln Phe Leu Glu Asn Thr Leu Leu Phe Lys Gly
65 70 75 80

Phe Phe Thr Gly His Pro Trp Tyr Asn Asp Leu Leu Val Asp Leu Gly
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Ser Lys Asp Ala Thr Asn Lys Tyr Lys Gly Lys Lys Val Asp Leu Tyr
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Arg Pro Lys Pro Ser Gln Leu Gln Arg Ser Asn Leu Val Lys Thr Phe
35 40 45

Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu Val Thr His Glu Asn
50 55 60

Val Lys Ser Val Asp Gln Leu Leu Ser His Asp Leu Ile Tyr Asn Val
65 70 75 80

Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu Leu Lys Asn Gln Glu
85 90 95

Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp Ile Tyr Gly Val Glu
100 105 110

Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala Glu Arg Ser Ala Cys
115 120 125

Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn His Leu Glu Ile Pro
130 135 140

Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly Ile Gln Ser Leu Ser
145 150 155 160

Phe Asp Ile Glu Gln Ile Lys Asn Gly Asn Cys Ser Arg Ile Ser Tyr
165 170 175

Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln Leu Tyr Thr Asn Gly
180 185 190

Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Pro Lys Asn Lys
195 200 205

Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro Glu Phe Thr Gln Ser
210 215 220

tta gtt aaa acc ttc aaa ata tat att ttc ttt atg agg gtg acc ctg	255
Leu Val Lys Thr Phe Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu	
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gtt act cac gag aat gtg aaa tct gtt gat caa ctt tta tca cac gat	303
Val Thr His Glu Asn Val Lys Ser Val Asp Gln Leu Leu Ser His Asp	
60 65 70 75	
tta ata tat aat gtt tca ggg cca aat tat gat aaa tta aaa act gaa	351
Leu Ile Tyr Asn Val Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu	
80 85 90	
ctt aag aac caa gag atg gca act tta ttt aag gat aaa aac gtt gat	399
Leu Lys Asn Gln Glu Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp	
95 100 105	
att tat ggt gta gaa tat tac cat ctc tgt tat tta tgt gaa aat gca	447
Ile Tyr Gly Val Glu Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala	
110 115 120	
gaa agg agt gca tgt ctc tac gga ggg gta aca aat cat gaa ggg aat	495
Glu Arg Ser Ala Cys Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn	
125 130 135	
cat tta gaa att cct aaa aag ata gtc gtt aaa gta tca atc gat ggt	543
His Leu Glu Ile Pro Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly	
140 145 150 155	
atc caa agc cta tca ttt gat att gaa caa ata aaa aat ggt aac tgc	591
Ile Gln Ser Leu Ser Phe Asp Ile Glu Gln Ile Lys Asn Gly Asn Cys	
160 165 170	
tca aga att agc tat aca gtt aga aaa tat ctt aca gat aat aag caa	639
Ser Arg Ile Ser Tyr Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln	
175 180 185	
cta tat act aat gga cct tct aaa tat gaa act gga tat ata aag ttc	687
Leu Tyr Thr Asn Gly Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe	
190 195 200	
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Ile Pro Lys Asn Lys Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro	
205 210 215	
gaa ttt act caa tct aaa tat ctt atg ata tat aaa gat aat gaa acg	783
Glu Phe Thr Gln Ser Lys Tyr Leu Met Ile Tyr Lys Asp Asn Glu Thr	
220 225 230 235	
ctt gac tca aac aca agc caa att gaa gtc tac cta aca acc aag taa	831
Leu Asp Ser Asn Thr Ser Gln Ile Glu Val Tyr Leu Thr Thr Lys	
240 245 250	
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ttaatgtaaa aacgctcatt tgatgagcgg ttttgtctta tctaaaggag ctttacctcc	951
taatgctgca aaattttaaa tgttggattt ttgtatttgt cattgtattt gatgggtaat	1011
cccatTTTTc gacagacatc	1031

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Leu Leu Leu Gly Phe Ser Ser Val Ser Tyr Ser Arg Glu Phe Thr Ile

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Asp	Phe	Ser	Thr	Gln	Gln	Ser	Tyr	Val	Ser	Ser	Leu	Asn	Ser	Ile	Arg					
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Thr	Glu	Ile	Ser	Thr	Pro	Leu	Glu	His	Ile	Ser	Gln	Gly	Thr	Thr	Ser					
	45					50					55									
gtg	tct	gtt	att	aac	cac	acc	cca	ccg	ggc	agt	tat	ttt	gct	gtg	gat	424				
Val	Ser	Val	Ile	Asn	His	Thr	Pro	Pro	Gly	Ser	Tyr	Phe	Ala	Val	Asp					
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Ile	Arg	Gly	Leu	Asp	Val	Tyr	Gln	Ala	Arg	Phe	Asp	His	Leu	Arg	Leu					
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att	att	gag	caa	aat	aat	tta	tat	gtg	gcc	ggg	ttc	gtt	aat	acg	gca	520				
Ile	Ile	Glu	Gln	Asn	Asn	Leu	Tyr	Val	Ala	Gly	Phe	Val	Asn	Thr	Ala					
			95					100					105							
aca	aat	act	ttc	tac	cgt	ttt	tca	gat	ttt	aca	cat	ata	tca	gtg	ccc	568				
Thr	Asn	Thr	Phe	Tyr	Arg	Phe	Ser	Asp	Phe	Thr	His	Ile	Ser	Val	Pro					
		110					115					120								
ggt	gtg	aca	acg	gtt	tcc	atg	aca	acg	gac	agc	agt	tat	acc	act	ctg	616				
Gly	Val	Thr	Thr	Val	Ser	Met	Thr	Thr	Asp	Ser	Ser	Tyr	Thr	Thr	Leu					
	125					130						135								
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Gln	Arg	Val	Ala	Ala	Leu	Glu	Arg	Ser	Gly	Met	Gln	Ile	Ser	Arg	His					
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Ser	Leu	Val	Ser	Ser	Tyr	Leu	Ala	Leu	Met	Glu	Phe	Ser	Gly	Asn	Thr					
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Met	Thr	Arg	Asp	Ala	Ser	Arg	Ala	Val	Leu	Arg	Phe	Val	Thr	Val	Thr					
			175					180					185							
gca	gaa	gcc	tta	cgc	ttc	agg	cag	ata	cag	aga	gaa	ttt	cgt	cag	gca	808				
Ala	Glu	Ala	Leu	Arg	Phe	Arg	Gln	Ile	Gln	Arg	Glu	Phe	Arg	Gln	Ala					
		190					195					200								
ctg	tct	gaa	act	gct	cct	gtg	tat	acg	atg	acg	ccg	gga	gac	gtg	gac	856				
Leu	Ser	Glu	Thr	Ala	Pro	Val	Tyr	Thr	Met	Thr	Pro	Gly	Asp	Val	Asp					
	205					210					215									
ctc	act	ctg	aac	tgg	ggg	cga	atc	agc	aat	gtg	ctt	ccg	gag	tat	cgg	904				
Leu	Thr	Leu	Asn	Trp	Gly	Arg	Ile	Ser	Asn	Val	Leu	Pro	Glu	Tyr	Arg					
220					225					230					235					
gga	gag	gat	ggt	gtc	aga	gtg	ggg	aga	ata	tcc	ttt	aat	aat	ata	tca	952				
Gly	Glu	Asp	Gly	Val	Arg	Val	Gly	Arg	Ile	Ser	Phe	Asn	Asn	Ile	Ser					
				240					245					250						
gcg	ata	ctg	ggg	act	gtg	gcc	gtt	ata	ctg	aat	tgc	cat	cat	cag	ggg	1000				
Ala	Ile	Leu	Gly	Thr	Val	Ala	Val	Ile	Leu	Asn	Cys	His	His	Gln	Gly					

255 260 265
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 Ala Arg Ser Val Arg Ala Val Asn Glu Glu Ser Gln Pro Glu Cys Gln
 270 275 280
 ata act ggc gac agg cct gtt ata aaa ata aac aat aca tta tgg gaa 1096
 Ile Thr Gly Asp Arg Pro Val Ile Lys Ile Asn Asn Thr Leu Trp Glu
 285 290 295
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 Ser Asn Thr Ala Ala Ala Phe Leu Asn Arg Lys Ser Gln Phe Leu Tyr
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 35 40 45
 Pro Leu Glu His Ile Ser Gln Gly Thr Thr Ser Val Ser Val Ile Asn
 50 55 60
 His Thr Pro Pro Gly Ser Tyr Phe Ala Val Asp Ile Arg Gly Leu Asp
 65 70 75 80
 Val Tyr Gln Ala Arg Phe Asp His Leu Arg Leu Ile Ile Glu Gln Asn
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 Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Ala Thr Asn Thr Phe Tyr

100	105	110
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115	120	125
Ser Met Thr Thr Asp Ser Ser Tyr Thr Thr Leu Gln Arg Val Ala Ala		
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Leu Glu Arg Ser Gly Met Gln Ile Ser Arg His Ser Leu Val Ser Ser		
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Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr Met Thr Arg Asp Ala		
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Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr Ala Glu Ala Leu Arg		
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Phe Arg Gln Ile Gln Arg Glu Phe Arg Gln Ala Leu Ser Glu Thr Ala		
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Pro Val Tyr Thr Met Thr Pro Gly Asp Val Asp Leu Thr Leu Asn Trp		
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Gly Arg Ile Ser Asn Val Leu Pro Glu Tyr Arg Gly Glu Asp Gly Val		
225	230	235
Arg Val Gly Arg Ile Ser Phe Asn Asn Ile Ser Ala Ile Leu Gly Thr		
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Val Ala Val Ile Leu Asn Cys His His Gln Gly Ala Arg Ser Val Arg		
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Ala Val Asn Glu Glu Ser Gln Pro Glu Cys Gln Ile Thr Gly Asp Arg		
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Pro Val Ile Lys Ile Asn Asn Thr Leu Trp Glu Ser Asn Thr Ala Ala		
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Ala Phe Leu Asn Arg Lys Ser Gln Phe Leu Tyr Thr Thr Gly Lys		
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gatttcaa at gctcgtttgt ggccagttat acctcaaata actcaagttg ttgagcacag 420
ccaacgcaca tgcagtttga cgtatgacag gtatgcttta tttcatttaa att atg 476
Met
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atg gtt ttc cag cca atc agt gag ttt ctc ttg ata agg aat gcg gga 524
Met Val Phe Gln Pro Ile Ser Glu Phe Leu Leu Ile Arg Asn Ala Gly
5 10 15

atg tct atg tat ttt aat aaa ata att tca ttt aat att att tca cga 572
Met Ser Met Tyr Phe Asn Lys Ile Ile Ser Phe Asn Ile Ile Ser Arg
20 25 30

ata gtt att tgt atc ttt ttg ata tgt gga atg ttc atg gct ggg gct 620
Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly Ala
35 40 45

tca gaa aaa tat gat gct aac gca ccg caa cag gtc cag cct tat tct 668
Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr Ser
50 55 60 65

gtc tct tca tct gca ttt gaa aat ctc cat cct aat aat gaa atg gag 716
Val Ser Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met Glu
70 75 80

agt tca atc aat ccc ttt tcc gca tcg gat aca gaa aga aat gct gca 764
Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala Ala
85 90 95

ata ata gat cgc gcc aat aag gag cag gag act gaa gcg gtg aat aag 812

Ile Ile Asp Arg Ala Asn Lys Glu Gln Glu Thr Glu Ala Val Asn Lys	
100 105 110	
atg ata agc acc ggg gcc agg tta gct gca tca ggc agg gca tct gat	860
Met Ile Ser Thr Gly Ala Arg Leu Ala Ala Ser Gly Arg Ala Ser Asp	
115 120 125	
gtt gct cac tca atg gtg ggc gat gcg gtt aat caa gaa atc aaa cag	908
Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys Gln	
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Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp Lys	
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Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp Tyr	
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Asp Ser Ala Ser Phe Leu Phe Phe Ser Gln Leu Gly Ile Arg Asn Lys	
180 185 190	
gac agc cgc aac aca ctt aac ctt ggc gtc ggg ata cgt aca ttg gag	1100
Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu Glu	
195 200 205	
aac ggt tgg ctg tac gga ctt aat act ttt tat gat aat gat ttg acc	1148
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Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp Tyr	
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Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His Ser	
245 250 255	
tcg cgt gat ttc tcc gac tat aaa gag cgc cca gcc act ggg ggg gat	1292
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Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly Lys	
275 280 285	
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Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly Lys	
290 295 300 305	
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Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn Tyr	
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acc ccc gtg cct cta ctc act gtc ggg gta gat cag cgt atg ggg aaa	1484
Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly Lys	
325 330 335	
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Ser	Ser	Lys	His	Glu	Thr	Gln	Trp	Asn	Leu	Gln	Met	Asn	Tyr	Arg	Leu		
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Gly	Glu	Ser	Phe	Gln	Ser	Gln	Leu	Ser	Pro	Ser	Ala	Val	Ala	Gly	Thr		
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cgt	cta	ctg	gcg	gag	agc	cgc	tat	aac	ctt	gtc	gat	cgt	aac	aat	aat		1628
Arg	Leu	Leu	Ala	Glu	Ser	Arg	Tyr	Asn	Leu	Val	Asp	Arg	Asn	Asn	Asn		
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atc	gtg	ttg	gag	tat	cag	aaa	cag	cag	gtg	gtt	aaa	ctg	aca	tta	tcg		1676
Ile	Val	Leu	Glu	Tyr	Gln	Lys	Gln	Gln	Val	Val	Lys	Leu	Thr	Leu	Ser		
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cca	gca	act	atc	tcc	ggc	ctg	ccg	ggt	cag	gtt	tat	cag	gtg	aac	gca		1724
Pro	Ala	Thr	Ile	Ser	Gly	Leu	Pro	Gly	Gln	Val	Tyr	Gln	Val	Asn	Ala		
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caa	gta	caa	ggg	gca	tct	gct	gta	agg	gaa	att	gtc	tgg	agt	gat	gcc		1772
Gln	Val	Gln	Gly	Ala	Ser	Ala	Val	Arg	Glu	Ile	Val	Trp	Ser	Asp	Ala		
	420						425					430					
gaa	ctg	att	gcc	gct	ggc	ggc	aca	tta	aca	cca	ctg	agt	acc	aca	caa		1820
Glu	Leu	Ile	Ala	Ala	Gly	Gly	Thr	Leu	Thr	Pro	Leu	Ser	Thr	Thr	Gln		
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Phe	Asn	Leu	Val	Leu	Pro	Pro	Tyr	Lys	Arg	Thr	Ala	Gln	Val	Ser	Arg		
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Val	Thr	Asp	Asp	Leu	Thr	Ala	Asn	Phe	Tyr	Ser	Leu	Ser	Ala	Leu	Ala		
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Val	Asp	His	Gln	Gly	Asn	Arg	Ser	Asn	Ser	Phe	Thr	Leu	Ser	Val	Thr		
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gca	ccg	gct	aat	ggg	aaa	act	gca	atc	acc	gtt	gag	ttc	acc	gtt	gct		2060
Ala	Pro	Ala	Asn	Gly	Lys	Thr	Ala	Ile	Thr	Val	Glu	Phe	Thr	Val	Ala		
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Asp	Phe	Glu	Gly	Lys	Pro	Leu	Ala	Gly	Gln	Glu	Val	Val	Ile	Thr	Thr		
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ggc	gtc	gcg	cgc	att	gca	tta	acc	aat	acg	aca	gat	ggc	gtg	acg	gta		2204
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Thr	Val	Lys	Val	Asp	Gly	Ala	Ala	Phe	Ser	Val	Pro	Ser	Val	Thr	Val		
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Asn	Phe	Thr	Ala	Asp	Pro	Ile	Pro	Asp	Ala	Gly	Arg	Ser	Ser	Phe	Thr		
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gtc	tcc	aca	ccg	gat	atc	ttg	gct	gat	ggc	acg	atg	agt	tcc	aca	tta	2636	
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Ser	Phe	Val	Pro	Val	Asp	Lys	Asn	Gly	His	Phe	Ile	Ser	Gly	Met	Gln		
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Gly	Leu	Ser	Phe	Thr	Gln	Asn	Gly	Val	Pro	Val	Ser	Ile	Ser	Pro	Ile		
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Thr	Glu	Gln	Pro	Asp	Ser	Tyr	Thr	Ala	Thr	Val	Val	Gly	Asn	Ser	Val		
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Leu	Val	Asn	Gly	Gln	Asn	Phe	Ala	Thr	Asp	Lys	Gly	Phe	Pro	Lys	Thr		
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Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser Glu	
850 855 860 865	
gtg gct gtg acg gcg aaa agt aaa aaa ttc cca agt tat tcg gtg agt	3116
Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val Ser	
870 875 880	
tat cgg ttc tac cca aat cgg tgg ata tac gat ggc ggc aga tcg ctg	3164
Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser Leu	
885 890 895	
gta tcc agt ctc gag gcc agc aga caa tgc caa ggt tca gat atg tct	3212
Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met Ser	
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gcg gtt ctt gaa tcc tca cgt gca acc aac gga acg cgt gcg cct gac	3260
Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro Asp	
915 920 925	
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Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser Asp	
930 935 940 945	
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Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe Glu	
950 955 960	
acc atg aat atg gac aca ggc gca ctg caa cca ggg cct gca tac ttg	3404
Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr Leu	
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Ala Phe Pro Leu Cys Ala Leu Ser Ile	
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Arg Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly
35 40 45

Ala Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr
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Ser Val Ser Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met
65 70 75 80

Glu Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala
85 90 95

Ala Ile Ile Asp Arg Ala Asn Lys Glu Gln Glu Thr Glu Ala Val Asn
100 105 110

Lys Met Ile Ser Thr Gly Ala Arg Leu Ala Ala Ser Gly Arg Ala Ser
115 120 125

Asp Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys
130 135 140

Gln Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp
145 150 155 160

Lys Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp
165 170 175

Tyr Asp Ser Ala Ser Phe Leu Phe Phe Ser Gln Leu Gly Ile Arg Asn
180 185 190

Lys Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu
195 200 205

Glu Asn Gly Trp Leu Tyr Gly Leu Asn Thr Phe Tyr Asp Asn Asp Leu
210 215 220

Thr Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp
225 230 235 240

Tyr Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His
245 250 255

Ser Ser Arg Asp Phe Ser Asp Tyr Lys Glu Arg Pro Ala Thr Gly Gly
260 265 270

Asp Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly
275 280 285

Lys Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly
290 295 300

Lys Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn
305 310 315 320

Tyr Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly
325 330 335

Lys Ser Ser Lys His Glu Thr Gln Trp Asn Leu Gln Met Asn Tyr Arg
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355 360 365

Thr Arg Leu Leu Ala Glu Ser Arg Tyr Asn Leu Val Asp Arg Asn Asn
370 375 380

Asn Ile Val Leu Glu Tyr Gln Lys Gln Gln Val Val Lys Leu Thr Leu
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Ser Pro Ala Thr Ile Ser Gly Leu Pro Gly Gln Val Tyr Gln Val Asn
405 410 415

Ala Gln Val Gln Gly Ala Ser Ala Val Arg Glu Ile Val Trp Ser Asp
420 425 430

Ala Glu Leu Ile Ala Ala Gly Gly Thr Leu Thr Pro Leu Ser Thr Thr
435 440 445

Gln Phe Asn Leu Val Leu Pro Pro Tyr Lys Arg Thr Ala Gln Val Ser
450 455 460

Arg Val Thr Asp Asp Leu Thr Ala Asn Phe Tyr Ser Leu Ser Ala Leu
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Ala Val Asp His Gln Gly Asn Arg Ser Asn Ser Phe Thr Leu Ser Val
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Thr Val Gln Gln Pro Gln Leu Thr Leu Thr Ala Ala Val Ile Gly Asp
500 505 510

Gly Ala Pro Ala Asn Gly Lys Thr Ala Ile Thr Val Glu Phe Thr Val
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Ala Asp Phe Glu Gly Lys Pro Leu Ala Gly Gln Glu Val Val Ile Thr
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565 570 575

Val Val Thr Ala Glu Val Glu Gly Gln Arg Gln Ser Val Asp Thr His
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Phe Val Lys Gly Thr Ile Ala Ala Asp Lys Ser Thr Leu Ala Ala Val
595 600 605

Pro Thr Ser Ile Ile Ala Asp Gly Leu Met Ala Ser Thr Ile Thr Leu
610 615 620

Glu Leu Lys Asp Thr Tyr Gly Asp Pro Gln Ala Gly Ala Asn Val Ala
625 630 635 640

Phe Asp Thr Thr Leu Gly Asn Met Gly Val Ile Thr Asp His Asn Asp
645 650 655

Gly Thr Tyr Ser Ala Pro Leu Thr Ser Thr Thr Leu Gly Val Ala Thr
660 665 670

Val Thr Val Lys Val Asp Gly Ala Ala Phe Ser Val Pro Ser Val Thr
675 680 685

Val Asn Phe Thr Ala Asp Pro Ile Pro Asp Ala Gly Arg Ser Ser Phe
690 695 700

Thr Val Ser Thr Pro Asp Ile Leu Ala Asp Gly Thr Met Ser Ser Thr
705 710 715 720

Leu Ser Phe Val Pro Val Asp Lys Asn Gly His Phe Ile Ser Gly Met
725 730 735

Gln Gly Leu Ser Phe Thr Gln Asn Gly Val Pro Val Ser Ile Ser Pro
740 745 750

Ile Thr Glu Gln Pro Asp Ser Tyr Thr Ala Thr Val Val Gly Asn Ser
755 760 765

Val Gly Asp Val Thr Ile Thr Pro Gln Val Asp Thr Leu Ile Leu Ser
770 775 780

Thr Leu Gln Lys Lys Ile Ser Leu Phe Pro Val Pro Thr Leu Thr Gly
785 790 795 800

Ile Leu Val Asn Gly Gln Asn Phe Ala Thr Asp Lys Gly Phe Pro Lys
805 810 815

Thr Ile Phe Lys Asn Ala Thr Phe Gln Leu Gln Met Asp Asn Asp Val
820 825 830

Ala Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val
835 840 845

Ser Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser
850 855 860

Glu Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val
865 870 875 880

Ser Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser
885 890 895

Leu Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met
900 905 910

Ser Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro
915 920 925

Asp Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser
930 935 940

Asp Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe
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<220> <221> MISC_FEATURE <222> (5)..(5) <223> Xaa is a variable
 amino acid

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 amino acid

<400> 34

Leu Xaa Gly Gly Xaa Gly Asn Asp Xaa
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<210> 35 <211> 830 <212> DNA <213> Neisseria meningitidis <220>
 <221> CDS <222> (143)..(667) <223>

<400> 35

tcggcaaaagc agccggatac cgctacgtat cttgaagtat tgaaaatatt acgatgcaaa 60

aaagaaaatt taagtataat acagcaggat tctttaacgg attcttaaca atttttctaa 120

ctgaccataa aggaacccaaa at atg aaa aaa gca ctt gcc aca ctg att gcc 172
 Met Lys Lys Ala Leu Ala Thr Leu Ile Ala
 1 5 10

ctc gct ctc ccg gcc gcc gca ctg gcg gaa ggc gca tcc ggc ttt tac 220
 Leu Ala Leu Pro Ala Ala Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr
 15 20 25

gtc caa gcc gat gcc gca cac gca aaa gcc tca agc tct tta ggt tct 268
 Val Gln Ala Asp Ala Ala His Ala Lys Ala Ser Ser Ser Leu Gly Ser
 30 35 40

gcc aaa ggc ttc agc ccg cgc atc tcc gca ggc tac cgc atc aac gac 316
 Ala Lys Gly Phe Ser Pro Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp
 45 50 55

ctc cgc ttc gcc gtc gat tac acg cgc tac aaa aac tat aaa gcc cca 364
 Leu Arg Phe Ala Val Asp Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro
 60 65 70

tcc acc gat ttc aaa ctt tac agc atc ggc gcg tcc gcc att tac gac 412

Ser Thr Asp Phe Lys Leu Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp
 75 80 85 90
 ttc gac acc caa tcg ccc gtc aaa ccg tat ctc ggc gcg cgc ttg agc 460
 Phe Asp Thr Gln Ser Pro Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser
 95 100 105
 ctc aac cgc gcc tcc gtc gac ttg ggc ggc agc gac agc ttc agc caa 508
 Leu Asn Arg Ala Ser Val Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln
 110 115 120
 acc tcc atc ggc ctc ggc gta ttg acg ggc gta agc tat gcc gtt acc 556
 Thr Ser Ile Gly Leu Gly Val Leu Thr Gly Val Ser Tyr Ala Val Thr
 125 130 135
 ccg aat gtc gat ttg gat gcc ggc tac cgc tac aac tac atc ggc aaa 604
 Pro Asn Val Asp Leu Asp Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys
 140 145 150
 gtc aac act gtc aaa aac gtc cgt tcc ggc gaa ctg tcc gtc ggc gtg 652
 Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Val Gly Val
 155 160 165 170
 cgc gtc aaa ttc tga tatgcgcctt attctgcaaa ccgccgagcc ttcggcggtt 707
 Arg Val Lys Phe
 ttgttttctg ccaccgcaac tacacaagcc ggcggttttg tacgataatc ccgaatgctg 767
 cggtttctgc cgccctatatt tttgaggaat ccgaaatgtc caaaaccatc atccacaccg 827
 aca 830
 <210> 36 <211> 174 <212> PRT <213> Neisseria meningitidis <400> 36
 Met Lys Lys Ala Leu Ala Thr Leu Ile Ala Leu Ala Leu Pro Ala Ala
 1 5 10 15
 Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr Val Gln Ala Asp Ala Ala
 20 25 30
 His Ala Lys Ala Ser Ser Ser Leu Gly Ser Ala Lys Gly Phe Ser Pro
 35 40 45
 Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp Leu Arg Phe Ala Val Asp
 50 55 60
 Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro Ser Thr Asp Phe Lys Leu
 65 70 75 80
 Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp Phe Asp Thr Gln Ser Pro
 85 90 95

Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser Leu Asn Arg Ala Ser Val
100 105 110

Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln Thr Ser Ile Gly Leu Gly
115 120 125

Val Leu Thr Gly Val Ser Tyr Ala Val Thr Pro Asn Val Asp Leu Asp
130 135 140

Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys Val Asn Thr Val Lys Asn
145 150 155 160

Val Arg Ser Gly Glu Leu Ser Val Gly Val Arg Val Lys Phe
165 170

<210> 37 <211> 352 <212> PRT <213> Homo sapiens <400> 37

Met Glu Gly Ile Ser Ile Tyr Thr Ser Asp Asn Tyr Thr Glu Glu Met
1 5 10 15

Gly Ser Gly Asp Tyr Asp Ser Met Lys Glu Pro Cys Phe Arg Glu Glu
20 25 30

Asn Ala Asn Phe Asn Lys Ile Phe Leu Pro Thr Ile Tyr Ser Ile Ile
35 40 45

Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile Leu Val Met Gly
50 55 60

Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr Arg Leu His Leu
65 70 75 80

Ser Val Ala Asp Leu Leu Phe Val Ile Thr Leu Pro Phe Trp Ala Val
85 90 95

Asp Ala Val Ala Asn Trp Tyr Phe Gly Asn Phe Leu Cys Lys Ala Val
100 105 110

His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val Leu Ile Leu Ala
115 120 125

Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His Ala Thr Asn Ser
130 135 140

Gln Arg Pro Arg Lys Leu Leu Ala Glu Lys Val Val Tyr Val Gly Val
145 150 155 160

Trp Ile Pro Ala Leu Leu Leu Thr Ile Pro Asp Phe Ile Phe Ala Asn
165 170 175

Val Ser Glu Ala Asp Asp Arg Tyr Ile Cys Asp Arg Phe Tyr Pro Asn
180 185 190

Asp Leu Trp Val Val Val Phe Gln Phe Gln His Ile Met Val Gly Leu
195 200 205

Ile Leu Pro Gly Ile Val Ile Leu Ser Cys Tyr Cys Ile Ile Ile Ser
210 215 220

Lys Leu Ser His Ser Lys Gly His Gln Lys Arg Lys Ala Leu Lys Thr
225 230 235 240

Thr Ile Ile Pro Ile Leu Ala Phe Phe Ala Cys Trp Leu Pro Tyr Tyr
245 250 255

Ile Gly Ile Ser Ile Asp Ser Phe Ile Leu Leu Glu Ile Ile Lys Gln
260 265 270

Gly Cys Glu Phe Glu Asn Thr Val His Lys Trp Ile Ser Ile Thr Glu
275 280 285

Ala Leu Ala Phe Phe His Cys Cys Leu Asn Pro Ile Leu Tyr Ala Phe
290 295 300

Leu Gly Ala Lys Phe Lys Thr Ser Ala Gln His Ala Leu Thr Ser Val
305 310 315 320

Ser Arg Gly Ser Ser Leu Lys Ile Leu Ser Lys Gly Lys Arg Gly Gly
325 330 335

His Ser Ser Val Ser Thr Glu Ser Glu Ser Ser Ser Phe His Ser Ser
340 345 350

<210> 38 <211> 645 <212> DNA <213> Homo sapiens <220> <221> CDS
<222> (10)..(639) <223>

<400> 38
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Met Leu Arg Ala Gly Glu Val His Thr Gly Thr Thr Ile Met
1 5 10

gca gtg gag ttt gac ggg ggc gtt gtg atg ggt tct gat tcc cga gtg 99
Ala Val Glu Phe Asp Gly Gly Val Val Met Gly Ser Asp Ser Arg Val

15	20	25	30	
tct gca ggc gag gcg gtg gtg aac cga gtg ttt gac aag ctg tcc ccg				147
Ser Ala Gly Glu Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro	35	40	45	
ctg cac gag cgc atc tac tgt gca ctc tct ggt tca gct gct gat gcc				195
Leu His Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala	50	55	60	
caa gcc gtg gcc gac atg gcc gcc tac cag ctg gag ctc cat ggg ata				243
Gln Ala Val Ala Asp Met Ala Ala Tyr Gln Leu Glu Leu His Gly Ile	65	70	75	
gaa ctg gag gaa cct cca ctt gtt ttg gct gct gca aat gtg gtg aga				291
Glu Leu Glu Glu Pro Pro Leu Val Leu Ala Ala Ala Asn Val Val Arg	80	85	90	
aat atc agc tat aaa tat cga gag gac ttg tct gca cat ctc atg gta				339
Asn Ile Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val	95	100	105	110
gct ggc tgg gac caa cgt gaa gga ggt cag gta tat gga acc ctg gga				387
Ala Gly Trp Asp Gln Arg Glu Gly Gly Gln Val Tyr Gly Thr Leu Gly	115	120	125	
gga atg ctg act cga cag cct ttt gcc att ggt ggc tcc ggc agc acc				435
Gly Met Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr	130	135	140	
ttt atc tat ggt tat gtg gat gca gca tat aag cca ggc atg tct ccc				483
Phe Ile Tyr Gly Tyr Val Asp Ala Ala Tyr Lys Pro Gly Met Ser Pro	145	150	155	
gag gag tgc agg cgc ttc acc aca gac gct att gct ctg gcc atg agc				531
Glu Glu Cys Arg Arg Phe Thr Asp Ala Ile Ala Leu Ala Met Ser	160	165	170	
cgg gat ggc tca agc ggg ggt gtc atc tac ctg gtc act att aca gct				579
Arg Asp Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala	175	180	185	190
gcc ggt gtg gac cat cga gtc atc ttg ggc aat gaa ctg cca aaa ttc				627
Ala Gly Val Asp His Arg Val Ile Leu Gly Asn Glu Leu Pro Lys Phe	195	200	205	
tat gat gag tga accttc				645
Tyr Asp Glu				

<210> 39 <211> 209 <212> PRT <213> Homo sapiens <400> 39

Met Leu Arg Ala Gly Glu Val His Thr Gly Thr Thr Ile Met Ala Val
1 5 10 15

Glu Phe Asp Gly Gly Val Val Met Gly Ser Asp Ser Arg Val Ser Ala
20 25 30

Gly Glu Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro Leu His
35 40 45

Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala Gln Ala
50 55 60

Val Ala Asp Met Ala Ala Tyr Gln Leu Glu Leu His Gly Ile Glu Leu
65 70 75 80

Glu Glu Pro Pro Leu Val Leu Ala Ala Ala Asn Val Val Arg Asn Ile
85 90 95

Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val Ala Gly
100 105 110

Trp Asp Gln Arg Glu Gly Gly Gln Val Tyr Gly Thr Leu Gly Gly Met
115 120 125

Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr Phe Ile
130 135 140

Tyr Gly Tyr Val Asp Ala Ala Tyr Lys Pro Gly Met Ser Pro Glu Glu
145 150 155 160

Cys Arg Arg Phe Thr Thr Asp Ala Ile Ala Leu Ala Met Ser Arg Asp
165 170 175

Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala Ala Gly
180 185 190

Val Asp His Arg Val Ile Leu Gly Asn Glu Leu Pro Lys Phe Tyr Asp
195 200 205

Glu

<210> 40 <211> 2247 <212> DNA <213> Homo sapiens <220> <221> CDS
<222> (1)..(2247) <223>

<400> 40
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Met Ala Ser Ser Arg Cys Pro Ala Pro Arg Gly Cys Arg Cys Leu Pro
1 5 10 15

gga gct tct ctc gca tgg ctg ggg aca gta ctg cta ctt ctc gcc gac 96
Gly Ala Ser Leu Ala Trp Leu Gly Thr Val Leu Leu Leu Leu Ala Asp
20 25 30

tgg gtg ctg ctc cgg acc gcg ctg ccc cgc ata ttc tcc ctg ctg gtg	144
Trp Val Leu Leu Arg Thr Ala Leu Pro Arg Ile Phe Ser Leu Leu Val	
35 40 45	
ccc acc gcg ctg cca ctg ctc cgg gtc tgg gcg gtg ggc ctg agc cgc	192
Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg	
50 55 60	
tgg gcc gtg ctc tgg ctg ggg gcc tgc ggg gtc ctc agg gca acg gtt	240
Trp Ala Val Leu Trp Leu Gly Ala Cys Gly Val Leu Arg Ala Thr Val	
65 70 75 80	
ggc tcc aag agc gaa aac gca ggt gcc cag ggc tgg ctg gct gct ttg	288
Gly Ser Lys Ser Glu Asn Ala Gly Ala Gln Gly Trp Leu Ala Ala Leu	
85 90 95	
aag cca tta gct gcg gca ctg ggc ttg gcc ctg ccg gga ctt gcc ttg	336
Lys Pro Leu Ala Ala Ala Leu Gly Leu Ala Leu Pro Gly Leu Ala Leu	
100 105 110	
ttc cga gag ctg atc tca tgg gga gcc ccc ggg tcc gcg gat agc acc	384
Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr	
115 120 125	
agg cta ctg cac tgg gga agt cac cct acc gcc ttc gtt gtc agt tat	432
Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr	
130 135 140	
gca gcg gca ctg ccc gca gca gcc ctg tgg cac aaa ctc ggg agc ctc	480
Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu	
145 150 155 160	
tgg gtg ccc ggc ggt cag ggc ggc tct gga aac cct gtg cgt cgg ctt	528
Trp Val Pro Gly Gly Gln Gly Gly Ser Gly Asn Pro Val Arg Arg Leu	
165 170 175	
cta ggc tgc ctg ggc tgc gag acg cgc cgc ctc tgc ctg ttc ctg gtc	576
Leu Gly Cys Leu Gly Ser Glu Thr Arg Arg Leu Ser Leu Phe Leu Val	
180 185 190	
ctg gtg gtc ctc tcc tct ctt ggg gag atg gcc att cca ttc ttt acg	624
Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr	
195 200 205	
ggc cgc ctc act gac tgg att cta caa gat ggc tca gcc gat acc ttc	672
Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe	
210 215 220	
act cga aac tta act ctc atg tcc att ctc acc ata gcc agt gca gtg	720
Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val	
225 230 235 240	
ctg gag ttc gtg ggt gac ggg atc tat aac aac acc atg ggc cac gtg	768
Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val	
245 250 255	
cac agc cac ttg cag gga gag gtg ttt ggg gct gtc ctg cgc cag gag	816
His Ser His Leu Gln Gly Glu Val Phe Gly Ala Val Leu Arg Gln Glu	
260 265 270	

acg gag ttt ttc caa cag aac cag aca ggt aac atc atg tct cgg gta	864
Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val	
275 280 285	
aca gag gac acg tcc acc ctg agt gat tct ctg agt gag aat ctg agc	912
Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser	
290 295 300	
tta ttt ctg tgg tac ctg gtg cga ggc cta tgt ctc ttg ggg atc atg	960
Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met	
305 310 315 320	
ctc tgg gga tca gtg tcc ctc acc atg gtc acc ctg gtc acc ctg cct	1008
Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro	
325 330 335	
ctg ctt ttc ctt ctg ccc aag aag gtg gga aaa tgg tac cag ttg ctg	1056
Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu	
340 345 350	
gaa gtg cag gtg cgg gaa tct ctg gca aag tcc agc cag gtg gcc att	1104
Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile	
355 360 365	
gag gct ctg tcg gcc atg cct aca gtt cga agc ttt gcc aac gag gag	1152
Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu	
370 375 380	
ggc gaa gcc cag aag ttt agg gaa aag ctg caa gaa ata aag aca ctc	1200
Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu	
385 390 395 400	
aac cag aag gag gct gtg gcc tat gca gtc aac tcc tgg acc act agt	1248
Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser	
405 410 415	
att tca ggt atg ctg ctg aaa gtg gga atc ctc tac att ggt ggg cag	1296
Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln	
420 425 430	
ctg gtg acc agt ggg gct gta agc agt ggg aac ctt gtc aca ttt gtt	1344
Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val	
435 440 445	
ctc tac cag atg cag ttc acc cag gct ttg gag gta ctg ctc tcc atc	1392
Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile	
450 455 460	
tac ccc aga gta cag aag gct gtg ggc tcc tca gag aaa ata ttt gag	1440
Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu	
465 470 475 480	
tac ctg gac cgc acc cct cgc tgc cca ccc agt ggt ctg ttg act ccc	1488
Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro	
485 490 495	
tta cac ttg gag ggc ctt gtc cag ttc caa gat gtc tcc ttt gcc tac	1536
Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr	
500 505 510	

cca aac cgc cca gat gtc tta gtg cta cag ggg ctg aca ttc acc cta	1584
Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu	
515 520 525	
cgc cct ggc gag gtg acg gcg ctg gtg gga ccc aat ggg tct ggg aag	1632
Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys	
530 535 540	
agc aca gtg gct gcc ctg ctg cag aat ctg tac cag ccc acc ggg gga	1680
Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly	
545 550 555 560	
cag ctg ctg ttg gat ggg aag ccc ctt ccc caa tat gag cac cgc tac	1728
Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr	
565 570 575	
ctg cac agg cag gtg gct gca gtg gga caa gag cca cag gta ttt gga	1776
Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly	
580 585 590	
aga agt ctt caa gaa aat att gcc tat ggc ctg acc cag aag cca act	1824
Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr	
595 600 605	
atg gag gaa atc aca gct gct gca gta aag tct ggg gcc cat agt ttc	1872
Met Glu Glu Ile Thr Ala Ala Ala Val Lys Ser Gly Ala His Ser Phe	
610 615 620	
atc tct gga ctc cct cag ggc tat gac aca gag gta ggc gag gct ggg	1920
Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Gln Val Gly Glu Ala Gly	
625 630 635 640	
agc cag ctg tca ggg ggt cag caa cag gca gtg gcg ttg gcc cga gca	1968
Ser Gln Leu Ser Gly Gly Gln Gln Gln Ala Val Ala Leu Ala Arg Ala	
645 650 655	
ttg atc cgg aaa ccg tgt gta ctt atc ctg gat gat gcc acc agt gcc	2016
Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala	
660 665 670	
ctg gat gca aac agc cag tta cag gtg gag cag ctc ctg tac gaa agc	2064
Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser	
675 680 685	
cct gag cgg tac tcc cgc tca gtg ctt ctc atc acc cag cac ctc agc	2112
Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser	
690 695 700	
ctg gtg gag cag gct gac cac atc ctc ttt ctg gaa gga ggc gct atc	2160
Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile	
705 710 715 720	
cgg gag ggg gga acc cac cag cag ctc atg gag aaa aag ggg tgc tac	2208
Arg Glu Gly Gly Thr His Gln Gln Leu Met Glu Lys Lys Gly Cys Tyr	
725 730 735	
tgg gcc atg gtg cag gct cct gca gat gct cca gaa tga	2247
Trp Ala Met Val Gln Ala Pro Ala Asp Ala Pro Glu	
740 745	

<210> 41 <211> 748 <212> PRT <213> Homo sapiens <400> 41
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 Gly Ala Ser Leu Ala Trp Leu Gly Thr Val Leu Leu Leu Leu Ala Asp
 20 25 30
 Trp Val Leu Leu Arg Thr Ala Leu Pro Arg Ile Phe Ser Leu Leu Val
 35 40 45
 Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg
 50 55 60
 Trp Ala Val Leu Trp Leu Gly Ala Cys Gly Val Leu Arg Ala Thr Val
 65 70 75 80
 Gly Ser Lys Ser Glu Asn Ala Gly Ala Gln Gly Trp Leu Ala Ala Leu
 85 90 95
 Lys Pro Leu Ala Ala Ala Leu Gly Leu Ala Leu Pro Gly Leu Ala Leu
 100 105 110
 Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr
 115 120 125
 Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr
 130 135 140
 Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu
 145 150 155 160
 Trp Val Pro Gly Gly Gln Gly Gly Ser Gly Asp Pro Val Arg Arg Leu
 165 170 175
 Leu Gly Cys Leu Gly Ser Glu Thr Arg Arg Leu Ser Leu Phe Leu Val
 180 185 190
 Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr
 195 200 205
 Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe
 210 215 220

Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val
225 230 235 240

Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val
245 250 255

His Ser His Leu Gln Gly Glu Val Phe Gly Ala Val Leu Arg Gln Glu
260 265 270

Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val
275 280 285

Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser
290 295 300

Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met
305 310 315 320

Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro
325 330 335

Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu
340 345 350

Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile
355 360 365

Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu
370 375 380

Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu
385 390 395 400

Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser
405 410 415

Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln
420 425 430

Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val
435 440 445

Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile
450 455 460

Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu
465 470 475 480

Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro
485 490 495

Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr
500 505 510

Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu
515 520 525

Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys
530 535 540

Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly
545 550 555 560

Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr
565 570 575

Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly
580 585 590

Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr
595 600 605

Met Glu Glu Ile Thr Ala Ala Ala Val Lys Ser Gly Ala His Ser Phe
610 615 620

Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly
625 630 635 640

Ser Gln Leu Ser Gly Gly Gln Gln Gln Ala Val Ala Leu Ala Arg Ala
645 650 655

Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala
660 665 670

Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser
675 680 685

Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser
690 695 700

Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile
705 710 715 720

Arg Glu Gly Gly Thr His Gln Gln Leu Met Glu Lys Lys Gly Cys Tyr
725 730 735

Trp Ala Met Val Gln Ala Pro Ala Asp Ala Pro Glu
740 745

<210> 42 <211> 2085 <212> DNA <213> Homo sapiens <220> <221> CDS
<222> (65)..(2005) <223>

<400> 42
gtgcagctct tgggtttttt gtggcttcct tcgttattgg agccaggcct acaccccagc 60
aacc atg tcc aag gga cct gca gtt ggt att gat ctt ggc acc acc tac 109
Met Ser Lys Gly Pro Ala Val Gly Ile Asp Leu Gly Thr Thr Tyr
1 5 10 15
tct tgt gtg ggt gtt ttc cag cac gga aaa gtc gag ata att gcc aat 157
Ser Cys Val Gly Val Phe Gln His Gly Lys Val Glu Ile Ile Ala Asn
20 25 30
gat cag gga aac cga acc act cca agc tat gtc gcc ttt acg gac act 205
Asp Gln Gly Asn Arg Thr Thr Pro Ser Tyr Val Ala Phe Thr Asp Thr
35 40 45
gaa cgg ttg atc ggt gat gcc gca aag aat caa gtt gca atg aac ccc 253
Glu Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro
50 55 60
acc aac aca gtt ttt gat gcc aaa cgt ctg att gga cgc aga ttt gat 301
Thr Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp
65 70 75
gat gct gtt gtc cag tct gat atg aaa cat tgg ccc ttt atg gtg gtg 349
Asp Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val
80 85 90 95
aat gat gct ggc agg ccc aag gtc caa gta gaa tac aag gga gag acc 397
Asn Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr
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aaa agc ttc tat cca gag gag gtg tct tct atg gtt ctg aca aag atg 445
Lys Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met
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aag gaa att gca gaa gcc tac ctt ggg aag act gtt acc aat gct gtg 493
Lys Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val
130 135 140
gtc aca gtg cca gct tac ttt aat gac tct cag cgt cag gct acc aaa 541
Val Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys
145 150 155
gat gct gga act att gct ggt ctc aat gta ctt aga att att aat gag 589
Asp Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu

160	165	170	175	
cca act gct gct gct att gct tac ggc tta gac aaa aag gtt gga gca				637
Pro Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala	180	185	190	
gaa aga aac gtg ctc atc ttt gac ctg gga ggt ggc act ttt gat gtg				685
Glu Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val	195	200	205	
tca atc ctc act att gag gat gga atc ttt gag gtc aag tct aca gct				733
Ser Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala	210	215	220	
gga gac acc cac ttg ggt gga gaa gat ttt gac aac cga atg gtc aac				781
Gly Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn	225	230	235	
cat ttt att gct gag ttt aag cgc aag cat aag aag gac atc agt gag				829
His Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu	240	245	250	255
aac aag aga gct gta aga cgc ctc cgt act gct tgt gaa cgt gct aag				877
Asn Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys	260	265	270	
cgt acc ctc tct tcc agc acc cag gcc agt att gag atc gat tct ctc				925
Arg Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu	275	280	285	
tat gaa gga atc gac ttc tat acc tcc att acc cgt gcc cga ttt gaa				973
Tyr Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala Arg Phe Glu	290	295	300	
gaa ctg aat gct gac ctg ttc cgt ggc acc ctg gac cca gta gag aaa				1021
Glu Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys	305	310	315	
gcc ctt cga gat gcc aaa cta gac aag tca cag att cat gat att gtc				1069
Ala Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val	320	325	330	335
ctg gtt ggt ggt tct act cgt atc ccc aag att cag aag ctt ctc caa				1117
Leu Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln	340	345	350	
gac ttc ttc aat gga aaa gaa ctg aat aag agc atc aac cct gat gaa				1165
Asp Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu	355	360	365	
gct gtt gct tat ggt gca gct gtc cag gca gcc atc ttg tct gga gac				1213
Ala Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp	370	375	380	
aag tct gag aat gtt caa gat ttg ctg ctc ttg gat gtc act cct ctt				1261
Lys Ser Glu Asn Val Gln Asp Leu Leu Leu Leu Asp Val Thr Pro Leu	385	390	395	
tcc ctt ggt att gaa act gct ggt gga gtc atg act gtc ctc atc aag				1309
Ser Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys				

400	405	410	415	
cgt aat acc acc att cct acc aag cag aca cag acc ttc act acc tat				1357
Arg Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe Thr Thr Tyr				
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tct gac aac cag cct ggt gtg ctt att cag gtt tat gaa ggc gag cgt				1405
Ser Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg				
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gcc atg aca aag gat aac aac ctg ctt ggc aag ttt gaa ctc aca ggc				1453
Ala Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly				
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ata cct cct gca ccc cga ggt gtt cct cag att gaa gtc act ttt gac				1501
Ile Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp				
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Ile Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp Lys Ser Thr				
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gga aaa gag aac aag att act atc act aat gac aag ggc cgt ttg agc				1597
Gly Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly Arg Leu Ser				
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Lys Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala				
515		520	525	
gaa gat gag aag cag agg gac aag gtg tca tcc aag aat tca ctt gag				1693
Glu Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu				
530		535	540	
tcc tat gcc ttc aac atg aaa gca act gtt gaa gat gag aaa ctt caa				1741
Ser Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln				
545		550	555	
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Gly Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp Lys Cys Asn				
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Glu Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu Lys Glu Glu				
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Phe Glu His Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile				
595		600	605	
acc aag ctg tac cag agt gca gga ggc atg cca gga gga atg cct ggg				1933
Thr Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly				
610		615	620	
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Gly Phe Pro Gly Gly Gly Ala Pro Pro Ser Gly Gly Ala Ser Ser Gly				
625		630	635	
ccc acc att gaa gag gtt gat taa gccaaccaag tgtagatgta gcattgttcc				2035
Pro Thr Ile Glu Glu Val Asp				

640

645

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2085

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35 40 45Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro Thr
50 55 60Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp Asp
65 70 75 80Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val Asn
85 90 95Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr Lys
100 105 110Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met Lys
115 120 125Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val Val
130 135 140Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys Asp
145 150 155 160Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu Pro
165 170 175Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala Glu
180 185 190Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val Ser
195 200 205

Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala Gly

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Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn His				
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Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu Asn				
	245		250	255
Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys Arg				
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Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu Tyr				
	275		280	285
Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala Arg Phe Glu Glu				
	290		295	300
Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys Ala				
305		310	315	320
Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val Leu				
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Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln Asp				
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Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu Ala				
	355		360	365
Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp Lys				
	370		375	380
Ser Glu Asn Val Gln Asp Leu Leu Leu Leu Asp Val Thr Pro Leu Ser				
385		390	395	400
Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys Arg				
	405		410	415
Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe Thr Thr Tyr Ser				
	420		425	430
Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg Ala				
	435		440	445
Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly Ile				

450 455 460
 Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp Ile
 465 470 475 480
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 485 490 495
 Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly Arg Leu Ser Lys
 500 505 510
 Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala Glu
 515 520 525
 Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu Ser
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 Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln Gly
 545 550 555 560
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 Glu His Gln Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile Thr
 595 600 605
 Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly Gly
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 atatgacata gagtataagg aggggttttt atg aac aaa aat gtg ttg aag ttt 174

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Met	Val	Phe	Ile	Met	Leu	Leu	Asn	Ile	Ile	Thr	Pro	Leu	Phe	Asn	Lys								
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Leu	Thr	Val	Ser	Pro	Ser	Lys	Ile	Glu	Asp	Gly	Gly	Lys	Thr	Thr	Val								
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Lys	Met	Thr	Phe	Asp	Asp	Lys	Asn	Gly	Lys	Ile	Gln	Asn	Gly	Asp	Met								
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Ile	Lys	Val	Ala	Trp	Pro	Thr	Ser	Gly	Thr	Val	Lys	Ile	Glu	Gly	Tyr								
				75					80					85									
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Ser	Lys	Thr	Val	Pro	Leu	Thr	Val	Lys	Gly	Glu	Gln	Val	Gly	Gln	Ala								
90					95					100													
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Val	Ile	Thr	Pro	Asp	Gly	Ala	Thr	Ile	Thr	Phe	Asn	Asp	Lys	Val	Glu								
105					110					115					120								
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Lys	Leu	Ser	Asp	Val	Ser	Gly	Phe	Ala	Glu	Phe	Glu	Val	Gln	Gly	Arg								
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Asn	Leu	Thr	Gln	Thr	Asn	Thr	Ser	Asp	Asp	Lys	Val	Ala	Thr	Ile	Thr								
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Ser	Gly	Asn	Lys	Ser	Thr	Asn	Val	Thr	Val	His	Lys	Ser	Glu	Ala	Gly								
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				170					175					180									
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Val	Ser	Lys	Asp	Ile	Thr	Ile	Lys	Asp	Gln	Ile	Gln	Gly	Gly	Gln	Gln								
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Leu	Asp	Leu	Ser	Thr	Leu	Asn	Ile	Asn	Val	Thr	Gly	Thr	His	Ser	Asn								
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Tyr Tyr Ser Gly Gln Ser Ala Ile Thr Asp Phe Glu Lys Ala Phe Pro	
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Gly Ser Lys Ile Thr Val Asp Asn Thr Lys Asn Thr Ile Asp Val Thr	
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Thr Lys Ile Thr Asn Glu Gln Gln Lys Glu Phe Val Asn Asn Ser Gln	
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Val Lys Gly Glu Leu Lys Val Leu Lys Gln Asp Lys Asp Thr Lys Ala	
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Ala	Lys	Gly	Gln	Gln	Val	Lys	Tyr	Thr	Val	Glu	Glu	Leu	Thr	Lys	Val	
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aaa	ggg	tat	aca	aca	cat	gtg	gat	aac	aat	gat	atg	ggg	aac	ttg	att	2286
Lys	Gly	Tyr	Thr	Thr	His	Val	Asp	Asn	Asn	Asp	Met	Gly	Asn	Leu	Ile	
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Ser Val Asn Leu Leu Ala Asp Gly Glu Lys Val Lys Thr Leu Asp Val	
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Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr	
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Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln	
825 830 835 840	
gat gga aaa gca aca gga aaa acg gca ata tta aat gaa tct aat aac	2718
Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn	
845 850 855	
tgg aca cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa	2766
Trp Thr His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln	
860 865 870	
gta aaa tac aca gtc gag gaa tta aca aag gtc aaa ggt tat aca aca	2814
Val Lys Tyr Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr	
875 880 885	
cat gtg gat aac aat gat atg ggc aac ttg att gtg acg aat aaa tat	2862
His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr	
890 895 900	
acg cca gaa aca aca tca att agt ggt gaa aaa gta tgg gac gac aaa	2910
Thr Pro Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys	
905 910 915 920	
gac aat caa gat ggt aag aga cca gaa aaa gtc agt gtg aat tta ttg	2958
Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu	
925 930 935	
gct aac gga gag aaa gta aaa acg tta gac gtg aca tct gaa aca aac	3006
Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn	
940 945 950	
tgg aag tac gaa ttt aaa gac tta ccg aag tat gat gaa gga aag aaa	3054

Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys	
955	960 965
ata gaa tat aca gtg acc gaa gat cac gta aaa gac tac aca aca gac	3102
Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp	
970 975 980	
atc aac ggt acg aca ata acg aac aag tat aca cca gga gag aca tcg	3150
Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser	
985 990 995 1000	
gca aca gta aca aaa aat tgg gat gac aat aat aac caa gac gga	3195
Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly	
1005 1010 1015	
aaa cga cca act gaa atc aaa gtt gag tta tat caa gat gga aaa	3240
Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys	
1020 1025 1030	
gca aca gga aaa acg gca ata tta aat gaa tct aat aac tgg aca	3285
Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr	
1035 1040 1045	
cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa gta	3330
His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val	
1050 1055 1060	
aaa tac aca gtc gat gaa tta aca aaa gtt aat ggc tat aca acg	3375
Lys Tyr Thr Val Asp Glu Leu Thr Lys Val Asn Gly Tyr Thr Thr	
1065 1070 1075	
cat gtg gat aac aat gat atg ggt aac ttg att gtg aca aat aaa	3420
His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys	
1080 1085 1090	
tat acg ccg aaa aaa ccg aat aaa cca atc tat cct gaa aaa cca	3465
Tyr Thr Pro Lys Lys Pro Asn Lys Pro Ile Tyr Pro Glu Lys Pro	
1095 1100 1105	
aaa gac aaa aca cca cca act aaa cct gat cat tct aat aaa gtt	3510
Lys Asp Lys Thr Pro Pro Thr Lys Pro Asp His Ser Asn Lys Val	
1110 1115 1120	
aaa cca act ccc cca gat aag cca tca aaa gtg gat aag gat gat	3555
Lys Pro Thr Pro Pro Asp Lys Pro Ser Lys Val Asp Lys Asp Asp	
1125 1130 1135	
caa cct aaa gat aat aaa acc aaa cct gaa aat cct cta aaa gaa	3600
Gln Pro Lys Asp Asn Lys Thr Lys Pro Glu Asn Pro Leu Lys Glu	
1140 1145 1150	
tta cca aaa act ggt atg aag att ata act tca tgg att aca tgg	3645
Leu Pro Lys Thr Gly Met Lys Ile Ile Thr Ser Trp Ile Thr Trp	
1155 1160 1165	
gta ttt ata ggt ata ttg gga ctg tat tta att tta aga aaa aga	3690
Val Phe Ile Gly Ile Leu Gly Leu Tyr Leu Ile Leu Arg Lys Arg	
1170 1175 1180	
ttt aac tca taa accattataa ttatttttat agataaggct attcttagtt	3742

Phe Asn Ser

ctatgtataa tacatgtata ttaataggtc actttttaatc tgtatgtaag cagactaaga 3802
 gtggcctttt aaacaaataa aaaaa 3827

<210> 45 <211> 1183 <212> PRT <213> Staphylococcus aureus <400> 45

Met Asn Lys Asn Val Leu Lys Phe Met Val Phe Ile Met Leu Leu Asn
 1 5 10 15

Ile Ile Thr Pro Leu Phe Asn Lys Asn Glu Ala Phe Ala Ala Arg Asp
 20 25 30

Ile Ser Ser Thr Asn Val Thr Asp Leu Thr Val Ser Pro Ser Lys Ile
 35 40 45

Glu Asp Gly Gly Lys Thr Thr Val Lys Met Thr Phe Asp Asp Lys Asn
 50 55 60

Gly Lys Ile Gln Asn Gly Asp Met Ile Lys Val Ala Trp Pro Thr Ser
 65 70 75 80

Gly Thr Val Lys Ile Glu Gly Tyr Ser Lys Thr Val Pro Leu Thr Val
 85 90 95

Lys Gly Glu Gln Val Gly Gln Ala Val Ile Thr Pro Asp Gly Ala Thr
 100 105 110

Ile Thr Phe Asn Asp Lys Val Glu Lys Leu Ser Asp Val Ser Gly Phe
 115 120 125

Ala Glu Phe Glu Val Gln Gly Arg Asn Leu Thr Gln Thr Asn Thr Ser
 130 135 140

Asp Asp Lys Val Ala Thr Ile Thr Ser Gly Asn Lys Ser Thr Asn Val
 145 150 155 160

Thr Val His Lys Ser Glu Ala Gly Thr Ser Ser Val Phe Tyr Tyr Lys
 165 170 175

Thr Gly Asp Met Leu Pro Glu Asp Thr Thr His Val Arg Trp Phe Leu
 180 185 190

Asn Ile Asn Asn Glu Lys Ser Tyr Val Ser Lys Asp Ile Thr Ile Lys
 195 200 205

Asp Gln Ile Gln Gly Gly Gln Gln Leu Asp Leu Ser Thr Leu Asn Ile
 210 215 220

Asn Val Thr Gly Thr His Ser Asn Tyr Tyr Ser Gly Gln Ser Ala Ile
 225 230 235 240

Thr Asp Phe Glu Lys Ala Phe Pro Gly Ser Lys Ile Thr Val Asp Asn
 245 250 255

Thr Lys Asn Thr Ile Asp Val Thr Ile Pro Gln Gly Tyr Gly Ser Tyr
 260 265 270

Asn Ser Phe Ser Ile Asn Tyr Lys Thr Lys Ile Thr Asn Glu Gln Gln
 275 280 285

Lys Glu Phe Val Asn Asn Ser Gln Ala Trp Tyr Gln Glu His Gly Lys
 290 295 300

Glu Glu Val Asn Gly Lys Ser Phe Asn His Thr Val His Asn Ile Asn
 305 310 315 320

Ala Asn Ala Gly Ile Glu Gly Thr Val Lys Gly Glu Leu Lys Val Leu
 325 330 335

Lys Gln Asp Lys Asp Thr Lys Ala Pro Ile Ala Asn Val Lys Phe Lys
 340 345 350

Leu Ser Lys Lys Asp Gly Ser Val Val Lys Asp Asn Gln Lys Glu Ile
 355 360 365

Glu Ile Ile Thr Asp Ala Asn Gly Ile Ala Asn Ile Lys Ala Leu Pro
 370 375 380

Ser Gly Asp Tyr Ile Leu Lys Glu Ile Glu Ala Pro Arg Pro Tyr Thr
 385 390 395 400

Phe Asp Lys Asp Lys Glu Tyr Pro Phe Thr Met Lys Asp Thr Asp Asn
 405 410 415

Gln Gly Tyr Phe Thr Thr Ile Glu Asn Ala Lys Ala Ile Glu Lys Thr
 420 425 430

Lys Asp Val Ser Ala Gln Lys Val Trp Glu Gly Thr Gln Lys Val Lys
 435 440 445

Pro Thr Ile Tyr Phe Lys Leu Tyr Lys Gln Asp Asp Asn Gln Asn Thr
 450 455 460

Thr Pro Val Asp Lys Ala Glu Ile Lys Lys Leu Glu Asp Gly Thr Thr
 465 470 475 480

Lys Val Thr Trp Ser Asn Leu Pro Glu Asn Asp Lys Asn Gly Lys Ala
 485 490 495

Ile Lys Tyr Leu Val Lys Glu Val Asn Ala Gln Gly Glu Asp Thr Thr
 500 505 510

Pro Glu Gly Tyr Thr Lys Lys Glu Asn Gly Leu Val Val Thr Asn Thr
 515 520 525

Glu Lys Pro Ile Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp
 530 535 540

Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn
 545 550 555 560

Leu Leu Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu
 565 570 575

Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly
 580 585 590

Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr
 595 600 605

Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu
 610 615 620

Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp
 625 630 635 640

Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys
 645 650 655

Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His
 660 665 670

Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr
 675 680 685

Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp
690 695 700

Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu
705 710 715 720

Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln
725 730 735

Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu Ala Asp Gly
740 745 750

Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr
755 760 765

Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr
770 775 780

Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly
785 790 795 800

Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val
805 810 815

Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr
820 825 830

Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr
835 840 845

Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu
850 855 860

Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Glu Glu Leu
865 870 875 880

Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly
885 890 895

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu Thr Thr Ser Ile Ser
900 905 910

Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro
915 920 925

Glu Lys Val Ser Val Asn Leu Leu Ala Asn Gly Glu Lys Val Lys Thr
 930 935 940

Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu
 945 950 955 960

Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp
 965 970 975

His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn
 980 985 990

Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp
 995 1000 1005

Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val
 1010 1015 1020

Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu
 1025 1030 1035

Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu Asp Glu
 1040 1045 1050

Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Asp Glu Leu Thr
 1055 1060 1065

Lys Val Asn Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly
 1070 1075 1080

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Lys Lys Pro Asn Lys
 1085 1090 1095

Pro Ile Tyr Pro Glu Lys Pro Lys Asp Lys Thr Pro Pro Thr Lys
 1100 1105 1110

Pro Asp His Ser Asn Lys Val Lys Pro Thr Pro Pro Asp Lys Pro
 1115 1120 1125

Ser Lys Val Asp Lys Asp Asp Gln Pro Lys Asp Asn Lys Thr Lys
 1130 1135 1140

Pro Glu Asn Pro Leu Lys Glu Leu Pro Lys Thr Gly Met Lys Ile
 1145 1150 1155

Ile Thr Ser Trp Ile Thr Trp Val Phe Ile Gly Ile Leu Gly Leu
 1160 1165 1170

Tyr Leu Ile Leu Arg Lys Arg Phe Asn Ser
 1175 1180

<210> 46 <211> 9 <212> PRT <213> Homo sapiens <220> <221>
 MISC_FEATURE <222> (4)..(4) <223> Xaa can be any amino acid

<220> <221> MISC_FEATURE <222> (6)..(7) <223> Xaa can be any amino
 acid

<400> 46

Ile Leu Val Xaa Tyr Xaa Xaa Leu Val
 1 5

<210> 49 <211> 237 <212> PRT <213> Homo sapiens <400> 49

Met Thr Ser Glu Ile Thr Tyr Ala Glu Val Arg Phe Lys Asn Glu Phe
 1 5 10 15

Lys Ser Ser Gly Ile Asn Thr Ala Ser Ser Ala Ala Ser Lys Glu Arg
 20 25 30

Thr Ala Pro His Lys Ser Asn Thr Gly Phe Pro Lys Leu Leu Cys Ala
 35 40 45

Ser Leu Leu Ile Phe Phe Leu Leu Leu Ala Ile Ser Phe Phe Ile Ala
 50 55 60

Phe Val Ile Phe Phe Gln Lys Tyr Ser Gln Leu Leu Glu Lys Lys Thr
 65 70 75 80

Thr Lys Glu Leu Val His Thr Thr Leu Glu Cys Val Lys Lys Asn Met
 85 90 95

Pro Val Glu Glu Thr Ala Trp Ser Cys Cys Pro Lys Asn Trp Lys Ser
 100 105 110

Phe Ser Ser Asn Cys Tyr Phe Ile Ser Thr Glu Ser Ala Ser Trp Gln

115

120

125

Asp Ser Glu Lys Asp Cys Ala Arg Met Glu Ala His Leu Leu Val Ile
 130 135 140

Asn Thr Gln Glu Glu Gln Asp Phe Ile Phe Gln Asn Leu Gln Glu Glu
 145 150 155 160

Ser Ala Tyr Phe Val Gly Leu Ser Asp Pro Glu Gly Gln Arg His Trp
 165 170 175

Gln Trp Val Asp Gln Thr Pro Tyr Asn Glu Ser Ser Thr Phe Trp His
 180 185 190

Pro Arg Glu Pro Ser Asp Pro Asn Glu Arg Cys Val Val Leu Asn Phe
 195 200 205

Arg Lys Ser Pro Lys Arg Trp Gly Trp Asn Asp Val Asn Cys Leu Gly
 210 215 220

Pro Gln Arg Ser Val Cys Glu Met Met Lys Ile His Leu
 225 230 235

<210> 53 <211> 32 <212> PRT <213> Homo sapiens <220> <221>
 MISC_FEATURE <222> (2)..(2) <223> Xaa is Ile or Leu

<220> <221> MISC_FEATURE <222> (3)..(3) <223> Xaa can be any amino
 acid

<220> <221> MISC_FEATURE <222> (6)..(6) <223> Xaa can be any amino
 acid

<220> <221> MISC_FEATURE <222> (8)..(25) <223> Xaa can be any amino
 acid

<220> <221> MISC_FEATURE <222> (26)..(26) <223> Xaa is Thr or Asn

<220> <221> MISC_FEATURE <222> (31)..(31) <223> Xaa is Ile or Val

<220> <221> MISC_FEATURE <222> (32)..(32) <223> Xaa is Lys or Arg

<400> 53

Glu Xaa Xaa Tyr Ala Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Tyr Ser Glu Xaa Xaa
 20 25 30

<210> 54 <211> 6 <212> PRT <213> Homo sapiens <220> <221>

MISC_FEATURE <222> (1)..(1) <223> Xaa is Thr or Asn

<220> <221> MISC_FEATURE <222> (6)..(6) <223> Xaa is Ile or Val

<400> 54

Xaa Glu Tyr Ser Glu Xaa
1 5

<210> 56 <211> 626 <212> PRT <213> Homo sapiens <400> 56

Met Ile Phe Leu Thr Ala Leu Pro Leu Phe Trp Ile Met Ile Ser Ala
1 5 10 15

Ser Arg Gly Gly His Trp Gly Ala Trp Met Pro Ser Ser Ile Ser Ala
20 25 30

Phe Glu Gly Thr Cys Val Ser Ile Pro Cys Arg Phe Asp Phe Pro Asp
35 40 45

Glu Leu Arg Pro Ala Val Val His Gly Val Trp Tyr Phe Asn Ser Pro
50 55 60

Tyr Pro Lys Asn Tyr Pro Pro Val Val Phe Lys Ser Arg Thr Gln Val
65 70 75 80

Val His Glu Ser Phe Gln Gly Arg Ser Arg Leu Leu Gly Asp Leu Gly
85 90 95

Leu Arg Asn Cys Thr Leu Leu Leu Ser Asn Val Ser Pro Glu Leu Gly
100 105 110

Gly Lys Tyr Tyr Phe Arg Gly Asp Leu Gly Gly Tyr Asn Gln Tyr Thr
115 120 125

Phe Ser Glu His Ser Val Leu Asp Ile Val Asn Thr Pro Asn Ile Val
130 135 140

Val Pro Pro Glu Val Val Ala Gly Thr Glu Val Glu Val Ser Cys Met
145 150 155 160

Val Pro Asp Asn Cys Pro Glu Leu Arg Pro Glu Leu Ser Trp Leu Gly
165 170 175

His Glu Gly Leu Gly Glu Pro Ala Val Leu Gly Arg Leu Arg Glu Asp
180 185 190

Glu Gly Thr Trp Val Gln Val Ser Leu Leu His Phe Val Pro Thr Arg
195 200 205

Glu Ala Asn Gly His Arg Leu Gly Cys Gln Ala Ser Phe Pro Asn Thr
210 215 220

Thr Leu Gln Phe Glu Gly Tyr Ala Ser Met Asp Val Lys Tyr Pro Pro
225 230 235 240

Val Ile Val Glu Met Asn Ser Ser Val Glu Ala Ile Glu Gly Ser His
245 250 255

Val Ser Leu Leu Cys Gly Ala Asp Ser Asn Pro Pro Pro Leu Leu Thr
260 265 270

Trp Met Arg Asp Gly Thr Val Leu Arg Glu Ala Val Ala Glu Ser Leu
275 280 285

Leu Leu Glu Leu Glu Glu Val Thr Pro Ala Glu Asp Gly Val Tyr Ala
290 295 300

Cys Leu Ala Glu Asn Ala Tyr Gly Gln Asp Asn Arg Thr Val Gly Leu
305 310 315 320

Ser Val Met Tyr Ala Pro Trp Lys Pro Thr Val Asn Gly Thr Met Val
325 330 335

Ala Val Glu Gly Glu Thr Val Ser Ile Leu Cys Ser Thr Gln Ser Asn
340 345 350

Pro Asp Pro Ile Leu Thr Ile Phe Lys Glu Lys Gln Ile Leu Ser Thr
355 360 365

Val Ile Tyr Glu Ser Glu Leu Gln Leu Glu Leu Pro Ala Val Ser Pro
370 375 380

Glu Asp Asp Gly Glu Tyr Trp Cys Val Ala Glu Asn Gln Tyr Gly Gln
385 390 395 400

Arg Ala Thr Ala Phe Asn Leu Ser Val Glu Phe Ala Pro Val Leu Leu
405 410 415

Leu Glu Ser His Cys Ala Ala Ala Arg Asp Thr Val Gln Cys Leu Cys
 420 425 430

Val Val Lys Ser Asn Pro Glu Pro Ser Val Ala Phe Glu Leu Pro Ser
 435 440 445

Arg Asn Val Thr Val Asn Glu Ser Glu Arg Glu Phe Val Tyr Ser Glu
 450 455 460

Arg Ser Gly Leu Val Leu Thr Ser Ile Leu Thr Leu Arg Gly Gln Ala
 465 470 475 480

Gln Ala Pro Pro Arg Val Ile Cys Thr Ala Arg Asn Leu Tyr Gly Ala
 485 490 495

Lys Ser Leu Glu Leu Pro Phe Gln Gly Ala His Arg Leu Met Trp Ala
 500 505 510

Lys Ile Gly Pro Val Gly Ala Val Val Ala Phe Ala Ile Leu Ile Ala
 515 520 525

Ile Val Cys Tyr Ile Thr Gln Thr Arg Arg Lys Lys Asn Val Thr Glu
 530 535 540

Ser Pro Ser Phe Ser Ala Gly Asp Asn Pro Pro Val Leu Phe Ser Ser
 545 550 555 560

Asp Phe Arg Ile Ser Gly Ala Pro Glu Lys Tyr Glu Ser Glu Arg Arg
 565 570 575

Leu Gly Ser Glu Arg Arg Leu Leu Gly Leu Arg Gly Glu Pro Pro Glu
 580 585 590

Leu Asp Leu Ser Tyr Ser His Ser Asp Leu Gly Lys Arg Pro Thr Lys
 595 600 605

Asp Ser Tyr Thr Leu Thr Glu Glu Leu Ala Glu Tyr Ala Glu Ile Arg
 610 615 620

Val Lys
 625

11-11-68

Met Ala Leu Leu Ala Glu His Leu Leu Lys Pro Leu Pro Ala Asp Lys
1 5 10 15

Gln Ile Glu Thr Gly Pro Phe Leu Glu Ala Val Ser His Leu Pro Pro
20 25 30

Phe Phe Asp Cys Leu Gly Ser Pro Val Phe Thr Pro Ile Lys Ala Asp
35 40 45

Ile Ser Gly Asn Ile Thr Lys Ile Lys Ala Val Tyr Asp Thr Asn Pro
50 55 60

Ala Lys Phe Arg Thr Leu Gln Asn Ile Leu Glu Val Glu Lys Glu Met
65 70 75 80

Tyr Gly Ala Glu Trp Pro Lys Val Gly Ala Thr Leu Ala Leu Met Trp
85 90 95

Leu Lys Arg Gly Leu Arg Phe Ile Gln Val Phe Leu Gln Ser Ile Cys
100 105 110

Asp Gly Glu Arg Asp Glu Asn His Pro Asn Leu Ile Arg Val Asn Ala
115 120 125

Thr Lys Ala Tyr Glu Met Ala Leu Lys Lys Tyr His Gly Trp Ile Val
130 135 140

Gln Lys Ile Phe Gln Ala Ala Leu Tyr Ala Ala Pro Tyr Lys Ser Asp
145 150 155 160

Phe Leu Lys Ala Leu Ser Lys Gly Gln Asn Val Thr Glu Glu Glu Cys
165 170 175

Leu Glu Lys Ile Arg Leu Phe Leu Val Asn Tyr Thr Ala Thr Ile Asp
180 185 190

Val Ile Tyr Glu Met Tyr Thr Gln Met Asn Ala Glu Leu Asn Tyr Lys
195 200 205

Val

<210> 64 <211> 276 <212> PRT <213> Homo sapiens <400> 64

Met Gly Asn Ser Met Lys Ser Thr Pro Ala Pro Ala Glu Arg Pro Leu
1 5 10 15

Pro Asn Pro Glu Gly Leu Asp Ser Asp Phe Leu Ala Val Leu Ser Asp
20 25 30

Tyr Pro Ser Pro Asp Ile Ser Pro Pro Ile Phe Arg Arg Gly Glu Lys
35 40 45

Leu Arg Val Ile Ser Asp Glu Gly Gly Trp Trp Lys Ala Ile Ser Leu
50 55 60

Ser Thr Gly Arg Glu Ser Tyr Ile Pro Gly Ile Cys Val Ala Arg Val
65 70 75 80

Tyr His Gly Trp Leu Phe Glu Gly Leu Gly Arg Asp Lys Ala Glu Glu
85 90 95

Leu Leu Gln Leu Pro Asp Thr Lys Val Gly Ser Phe Met Ile Arg Glu
100 105 110

Ser Glu Thr Lys Lys Gly Phe Tyr Ser Leu Ser Val Arg His Arg Gln
115 120 125

Val Lys His Tyr Arg Ile Phe Arg Leu Pro Asn Asn Trp Tyr Tyr Ile
130 135 140

Ser Pro Arg Leu Thr Phe Gln Cys Leu Glu Asp Leu Val Asn His Tyr
145 150 155 160

Ser Glu Val Ala Asp Gly Leu Cys Cys Val Leu Thr Thr Pro Cys Leu
165 170 175

Thr Gln Ser Thr Ala Ala Pro Ala Val Arg Ala Ser Ser Ser Pro Val
180 185 190

Thr Leu Arg Gln Lys Thr Val Asp Trp Arg Arg Val Ser Arg Leu Gln
195 200 205

Glu Asp Pro Glu Gly Thr Glu Asn Pro Leu Gly Val Asp Glu Ser Leu
210 215 220

Phe Ser Tyr Gly Leu Arg Glu Ser Ile Ala Ser Tyr Leu Ser Leu Thr
225 230 235 240

Ser Glu Asp Asn Thr Ser Phe Asp Arg Lys Lys Lys Ser Ile Ser Leu
245 250 255

Met Tyr Gly Gly Ser Lys Arg Lys Ser Ser Phe Phe Ser Ser Pro Pro
260 265 270

Tyr Phe Glu Asp
275

<210> 65 <211> 18 <212> PRT <213> Homo sapiens <400> 65

Lys Arg Phe Lys Gln Asp Gly Gly Trp Ser His Trp Ser Pro Trp Ser
1 5 10 15

Ser Cys

<210> 66 <211> 18 <212> PRT <213> Homo sapiens <400> 66

Lys Arg Ala Lys Ala Ala Gly Gly Trp Ser His Trp Ser Pro Trp Ser
1 5 10 15

Ser Cys

<210> 67 <211> 1784 <212> DNA <213> Staphylococcus aureus <220>
<221> CDS <222> (184)..(1635) <223>

<400> 67
tcgaaatagc gtgattttgc ggttttaagc cttttacttc ctgaataaat ctttcagcaa 60
aatattttatt ttataagttg taaaacttac ctttaaattt aattataaat atagatttta 120
gtattgcâat acataattcg ttatattatg atgactatac aaatacatatc aggggggtatt 180
aat ttg aaa aag aaa aac att tat tca att cgt aaa cta ggt gta ggt 228
Leu Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly
1 5 10 15
att gca tct gta act tta ggt aca tta ctt ata tct ggt ggc gta aca 276
Ile Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr
20 25 30
cct gct gca aat gct gcg caa cac gat gaa gct caa caa aat gct ttt 324
Pro Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe
35 40 45
tat caa gtc tta aat atg cct aac tta aat gct gat caa cgc aat ggt 372
Tyr Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly
50 55 60
ttt atc caa agc ctt aaa gat gat cca agc caa agt gct aac gtt tta 420
Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu

65	70	75	
ggt gaa gct caa aaa ctt aat gac tct caa gct cca aaa gct gat gcg Gly Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala 80 85 90 95			468
caa caa aat aac ttc gac aaa gat caa caa agc gcc ttc tat gaa atc Gln Gln Asn Asn Phe Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile 100 105 110			516
ttg aac atg cct aac tta aac gaa gcg caa cgt aac ggc ttc att caa Leu Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln 115 120 125			564
agt ctt aaa gac gac cca agc caa agc act aac gtt tta ggt gaa gct Ser Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala 130 135 140			612
aaa aaa tta aac gaa tct caa gca ccg aaa gct gat aac aat ttc aac Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn 145 150 155			660
aaa gaa caa caa aat gct ttc tat gaa atc ttg aat atg cct aac tta Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu 160 165 170 175			708
aac gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa gat gac cca Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro 180 185 190			756
agc caa agt gct aac cta ttg tca gaa gct aaa aag tta aat gaa tct Ser Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser 195 200 205			804
caa gca ccg aaa gcg gat aac aaa ttc aac aaa gaa caa caa aat gct Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala 210 215 220			852
ttc tat gaa atc tta cat tta cct aac tta aac gaa gaa caa cgc aat Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn 225 230 235			900
ggt ttc atc caa agc cta aaa gat gac cca agc caa agc gct aac ctt Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu 240 245 250 255			948
tta gca gaa gct aaa aag cta aat gat gct caa gca cca aaa gct gac Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp 260 265 270			996
aac aaa ttc aac aaa gaa caa caa aat gct ttc tat gaa att tta cat Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His 275 280 285			1044
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SECRET

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Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met
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Leu Pro Ala Lys Leu Ser Val Leu Asp Leu Ser Tyr Asn Arg Leu Asp
290 295 300

Arg Asn Pro Ser Pro Asp Glu Leu Pro Gln Val Gly Asn Leu Ser Leu
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Lys Gly Asn Pro Phe Leu Asp Ser Glu Ser His Ser Glu Lys Phe Asn
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Cys Arg Tyr Gly Phe Ile Glu Gly Asn Val Val Ile Pro Arg Ile His

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95

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Trp Leu Ile Ile Leu Ala Ser Leu Leu Ala Leu Ala Leu Ile Leu Ala
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Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala Gly Thr Ala Ala			
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165 170 175

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195 200 205

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Leu Lys Ile Thr His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys
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Gly Thr Ala Ala Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr
260 265 270

Gly Lys Leu Leu Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val
 275 280 285

Lys Ser Asp Gly Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly
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 Thr Asn Lys Gln Leu Asp
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Arg Glu Gly Phe Lys Thr Lys Gln Ala Ala Arg Glu Thr Leu Ile Ser
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Leu Gln Ala Glu Leu Asp Lys Pro Lys Ser Ser Met Thr Phe Gly Ala
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Leu Thr Asp Gln Trp Leu Lys Glu Tyr Glu Lys Thr Val Gln Gly Ser
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Thr Tyr Leu Lys Thr Glu Arg Asn Ile Asn Lys His Ile Leu Pro Lys
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Leu Asp Lys Val Lys Ile Gly Asp Ile Asn Pro Leu Leu Ile Gln Arg
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Leu Thr Glu Glu Trp Cys Asn Asp Leu Lys Tyr Gly Gly Lys Ile Leu
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Gly Leu Val Arg Asn Ile Leu Asn Leu Ala Val Arg Tyr Gly Tyr Ile
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Asn Asn Asn Pro Ala Leu Pro Ile Thr Pro Pro Lys Ile Lys Arg Lys
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Arg Lys Met Asn Asn Asn Phe Tyr Thr Leu Asp Gln Leu Lys Gln Phe
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Leu Glu Leu Val Glu Lys Thr Asp Asn Ile Glu Lys Ile Ala Leu Phe
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Arg Leu Leu Ala Phe Thr Gly Ile Arg Lys Gly Glu Leu Leu Ala Leu
195 200 205

Thr Trp Asp Asp Leu Asn Gly Asn Thr Leu Ser Ile Asn Lys Ala Val
210 215 220

Thr Arg Thr Gln Val Gly Leu Glu Ile Asp Val Thr Lys Thr Lys Ser
225 230 235 240

Ser Asp Arg Leu Ile Ser Leu Asp Asp Glu Thr Leu Glu Ile Leu Gln
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Glu Leu His Glu Thr Phe Pro Thr Ser Thr Leu Met Phe Gln Ser Lys
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Ser Gly Gly Ile Met Thr Pro Ser Leu Pro Arg Lys Trp Leu Leu Gln
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Ile Ile Lys Gly Ile Asp Leu Pro Gln Ile Thr Ile His Gly Phe Arg
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His Thr His Ala Ser Leu Leu Phe Glu Ser Gly Leu Ser Leu Lys Gln
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Val Gln His Arg Leu Gly His Gly Asp Leu Gln Thr Thr Met Asn Val
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Tyr	Ile	Phe	Thr	Asp	Lys	Asp	His	Lys	Gln	Pro	Lys	Gln	Leu	Val	Asn		
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Tyr	Tyr	Tyr	Val	Tyr	Asn	Asp	Phe	Ser	Asp	His	Tyr	Pro	Ile	Lys	Ala		
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Tyr	Ser	Lys															
		330															
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Met Val Lys Lys Thr Lys Ser Asn Ser Leu Lys Lys Val Ala Thr Leu
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Ala Leu Ala Asn Leu Leu Leu Val Gly Ala Leu Thr Asp Asn Ser Ala
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Lys Ala Glu Ser Lys Lys Asp Asp Thr Asp Leu Lys Leu Val Ser His
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Asn Val Tyr Met Leu Ser Thr Val Leu Tyr Pro Asn Trp Gly Gln Tyr
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Lys Arg Ala Asp Leu Ile Gly Gln Ser Ser Tyr Ile Lys Asn Asn Asp
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Val Val Ile Phe Asn Glu Ala Phe Asp Asn Gly Ala Ser Asp Lys Leu
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Leu Ser Asn Val Lys Lys Glu Tyr Pro Tyr Gln Thr Pro Val Leu Gly
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Glu Lys Ile Gln His Val Phe Lys Ser Gly Cys Gly Phe Asp Asn Asp
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Ser Asn Lys Gly Phe Val Tyr Thr Lys Ile Glu Lys Asn Gly Lys Asn
165 170 175

Val His Val Ile Gly Thr His Thr Gln Ser Glu Asp Ser Arg Cys Gly
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Ala Gly His Asp Arg Lys Ile Arg Ala Glu Gln Met Lys Glu Ile Ser
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Asp Phe Val Lys Lys Lys Asn Ile Pro Lys Asp Glu Thr Val Tyr Ile
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Gly Gly Asp Leu Asn Val Asn Lys Gly Thr Pro Glu Phe Lys Asp Met
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Leu Lys Asn Leu Asn Val Asn Asp Val Leu Tyr Ala Gly His Asn Ser
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Gln Pro Lys Gln Leu Val Asn Glu Val Val Thr Glu Lys Pro Lys Pro
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 actagcatta gcaaatatta ttaaatacaaa gggcttcgat tcataaaatt taaaacaatg 2696
 attaaaatta gacgtgtaaa tgttaaattc taaaacggaa ataccgcgta tcctatttaa 2756
 ccactttttg gttcaatcac tatatttcac acagcttcaa taataaaacg aaactgcttc 2816
 aatccgcttc aacttcaacc tacctcattc agtaacaaaa cgaatccgct tcatccaaaa 2876
 tcaaccattc taacgcacat actcaaatat agcagctgca ccataaccga caccaatata 2936
 catcgtaacc atgccgtaac ggctatcggg acgtctaccc atttcattaa gtaaacgcgc 2996
 gggttaacatt gctcctgtag cacctaattg atgacctaaa gcaata 3042

<210> 86 <211> 715 <212> PRT <213> Staphylococcus aureus <400> 86

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1 5 10 15

Leu Phe Thr Trp Asp Asn Lys Ala Asp Ala Ile Val Thr Lys Asp Tyr
20 25 30

Ser Lys Glu Ser Arg Val Asn Glu Asn Ser Lys Tyr Gly Thr Leu Ile
35 40 45

Ser Asp Trp Tyr Leu Lys Gly Arg Leu Thr Ser Leu Glu Ser Gln Phe
50 55 60

Ile Asn Ala Leu Asp Ile Leu Glu Thr Tyr His Tyr Gly Glu Lys Glu
65 70 75 80

Tyr Lys Asp Ala Lys Asp Lys Leu Met Thr Arg Ile Leu Gly Glu Asp
85 90 95

Gln Tyr Leu Leu Glu Arg Lys Lys Val Gln Tyr Glu Glu Tyr Lys Lys
100 105 110

Leu Tyr Gln Lys Tyr Lys Glu Glu Asn Pro Thr Ser Lys Gly Leu Lys
115 120 125

Leu Lys Thr Phe Asp Gln Tyr Thr Ile Glu Asp Leu Thr Met Arg Glu
130 135 140

Tyr Asn Glu Leu Thr Glu Ser Leu Lys Ser Ala Val Lys Asp Phe Glu
145 150 155 160

Lys Asp Val Glu Lys Ile Glu Asn Gln His His Asp Leu Lys Pro Phe
165 170 175

Thr Asp Glu Met Glu Glu Lys Ala Thr Ser Arg Val Asp Asp Leu Ala
180 185 190

Asn Lys Ala Tyr Ser Val Tyr Phe Ala Phe Val Arg Asp Thr Gln His
195 200 205

Lys Thr Glu Ala Leu Glu Leu Lys Ala Lys Val Asp Leu Val Leu Gly
210 215 220

Asp Glu Asp Lys Pro His Arg Ile Ser Asn Glu Arg Ile Glu Lys Glu
225 230 235 240

Met Ile Lys Asp Leu Glu Ser Ile Ile Glu Asp Phe Phe Ile Glu Thr
245 250 255

Gly Leu Asn Lys Pro Gly Asn Ile Thr Ser Tyr Asp Ser Ser Lys His
260 265 270

His Tyr Lys Asn His Ser Glu Gly Phe Glu Ala Leu Val Lys Glu Thr
275 280 285

Arg Glu Ala Val Ala Asn Ala Asp Glu Ser Trp Lys Thr Lys Thr Val
290 295 300

Lys Lys Tyr Gly Glu Ser Glu Thr Lys Ser Pro Val Val Lys Glu Glu
305 310 315 320

Asn Lys Val Glu Asp Pro Gln Ser Pro Lys Phe Asp Asn Gln Gln Glu
325 330 335

Val Lys Thr Thr Ala Gly Lys Ala Glu Glu Thr Thr Gln Pro Val Ala
340 345 350

Gln Pro Leu Val Lys Ile Pro Gln Gly Thr Ile Thr Gly Glu Ile Val
355 360 365

Lys Gly Pro Glu Tyr Pro Thr Met Glu Asn Lys Thr Leu Gln Gly Glu
370 375 380

Ile Val Gln Gly Pro Asp Phe Pro Thr Met Glu Gln Ser Gly Pro Ser
385 390 395 400

Leu Ser Asp Asn Tyr Thr Gln Pro Thr Thr Pro Asn Pro Ile Leu Glu
405 410 415

Gly Leu Glu Gly Ser Ser Ser Lys Leu Glu Ile Lys Pro Gln Gly Thr
420 425 430

Glu Ser Thr Leu Lys Gly Ile Gln Gly Glu Ser Ser Asp Ile Glu Val
435 440 445

Lys Pro Gln Ala Thr Glu Thr Thr Glu Ala Ser Gln Tyr Gly Pro Arg
450 455 460

Pro Gln Phe Asn Lys Thr Pro Lys Tyr Val Lys Tyr Arg Asp Ala Gly
465 470 475 480

Thr Gly Ile Arg Glu Tyr Asn Asp Gly Thr Phe Gly Tyr Glu Ala Arg
485 490 495

Pro Arg Phe Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr
500 505 510

Asn Gln Asp Gly Thr Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys
515 520 525

Ala Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln
530 535 540

Val Ser Tyr Gly Ala Arg Pro Thr Gln Lys Lys Pro Ser Glu Thr Asn
545 550 555 560

Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly Ala
565 570 575

Arg Pro Thr Tyr Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr
580 585 590

Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr Lys
595 600 605

Lys Pro Ser Lys Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly
610 615 620

Gln Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr
625 630 635 640

Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly
645 650 655

Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val
660 665 670

Thr Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr
675 680 685

Asn Lys Pro Ser Lys Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asp
690 695 700

Gly Thr Ala Thr Tyr Gly Pro Arg Val Thr Lys
705 710 715

<210> 87 <211> 2252 <212> DNA <213> Staphylococcus aureus <220>
<221> CDS <222> (698)..(2224) <223>

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ttaattgaaa caatccacca taaataacct caaactgtta gagctctcaa taatttaaaa 120
aagcaaggct atctaataaa agaacggctc aactgaagat gaaagaaaaa ttttaattca 180
tatgaatgac ggcgagcaag accatgctga acaattatta gctcaagtga atcaattatt 240
ggcagataaa aatcatttac atcttggttt tgaataatat ctctattacg caagtgtgct 300
gtattctaaa gtgccattgt gttttctatt ttttaataaa acctcagcac attatgaaca 360
actttctatt ttctatatct cttaaaacca tttccgaaat taaacctcag cacattcaaa 420
attccatttt attcttaaaa atatttttta actcatatgt aataaacggc tticattata 480
aaaaatatct atatatttta tctgttttta ttaatcgga tagcgtgatt ttgcgggttt 540
aagcctttta ctctctgaat aaatctttgg acaaaatttt tattttataa gttgtaaaac 600
ttacctttaa atttaattat aaatatagat ttagtattg caatacataa ttogttatat 660
tatgatgact ttacaaatac atacaggggg tattaat ttg aaa aag aaa aac att 715
Leu Lys Lys Lys Asn Ile
1 5
tat tca att cgt aaa cta ggt gta ggt att gca tct gta act tta ggt 763
Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile Ala Ser Val Thr Leu Gly
10 15 20
aca tta ctt ata tct ggt ggc gta aca cct gct gca aat gct gcg caa 811
Thr Leu Leu Ile Ser Gly Gly Val Thr Pro Ala Ala Asn Ala Ala Gln

25	30	35	
cac gat gaa gct caa caa aat gct ttt tat caa gtg tta aat atg cct His Asp Glu Ala Gln Gln Asn Ala Phe Tyr Gln Val Leu Asn Met Pro 40 45 50			859
aac tta aac gct gat caa cgt aat ggt ttt atc caa agc ctt aaa gat Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp 55 60 65 70			907
gat cca agc caa agt gct aac gtt tta ggt gaa gct caa aaa ctt aat Asp Pro Ser Gln Ser Ala Asn Val Leu Gly Glu Ala Gln Lys Leu Asn 75 80 85			955
gac tct caa gct cca aaa gct gat gcg caa caa aat aag ttc aac aaa Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln Gln Asn Lys Phe Asn Lys 90 95 100			1003
gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta aac Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn 105 110 115			1051
gaa gag caa cgc aat ggt ttc att caa agt ctt aaa gac gat cca agc Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser 120 125 130			1099
caa agc act aac gtt tta ggt gaa gct aaa aaa tta aac gaa tct caa Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser Gln 135 140 145 150			1147
gca ccg aaa gct gac aac aat ttc aac aaa gaa caa caa aat gct ttc Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys Glu Gln Gln Asn Ala Phe 155 160 165			1195
tat gaa atc ttg aac atg cct aac ttg aac gaa gaa caa cgc aat ggt Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly 170 175 180			1243
ttc atc caa agc tta aaa gat gac cca agt caa agt gct aac ctt tta Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu 185 190 195			1291
gca gaa gct aaa aag tta aat gaa tct caa gca ccg aaa gct gat aac Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn 200 205 210			1339
aaa ttc aac aaa gaa caa caa aat gct ttc tat gaa atc tta cat tta Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu 215 220 225 230			1387
cct aac tta aat gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys 235 240 245			1435
gat gac cca agc caa agc gct aac ctt tta gca gaa gct aaa aag cta Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu 250 255 260			1483
aat gat gca caa gca cca aaa gct gac aac aaa ttc aac aaa gaa caa Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln			1531

265	270	275	
caa aat gct ttc tat gaa att tta cat tta cct aac tta act gaa gaa Gln Asn Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr Glu Glu 280 285 290			1579
caa cgt aac ggc ttc atc caa agc ctt aaa gac gat cct tca gtg agc Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Val Ser 295 300 305 310			1627
aaa gaa att tta gca gaa gct aaa aag cta aac gat gct caa gca cca Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro 315 320 325			1675
aaa gag gaa gac aac aac aag cct ggt aaa gaa gac ggc aac aaa cct Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 330 335 340			1723
ggt aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro 345 350 355			1771
ggc aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro 360 365 370			1819
ggc aaa gaa gat ggc aac aaa cct ggt aaa gaa gac ggc aac aag cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 375 380 385 390			1867
ggt aaa gaa gat ggc aac aag cct ggt aaa gaa gat ggc aac aag cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 395 400 405			1915
ggt aaa gaa gac ggc aac gga gta cat gtc gtt aaa cct ggt gat aca Gly Lys Glu Asp Gly Asn Gly Val His Val Val Lys Pro Gly Asp Thr 410 415 420			1963
gta aat gac att gca aaa gca aac ggc act act gct gac aaa att gct Val Asn Asp Ile Ala Lys Ala Asn Gly Thr Thr Ala Asp Lys Ile Ala 425 430 435			2011
gca gat aac aaa tta gct gat aaa aac atg atc aaa cct ggt caa gaa Ala Asp Asn Lys Leu Ala Asp Lys Asn Met Ile Lys Pro Gly Gln Glu 440 445 450			2059
ctt gtt gtt gat aag aag caa cca gca aac cat gca gat gct aac aaa Leu Val Val Asp Lys Lys Gln Pro Ala Asn His Ala Asp Ala Asn Lys 455 460 465 470			2107
gct caa gca tta cca gaa act ggt gaa gaa aat cca ttc atc ggt aca Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu Asn Pro Phe Ile Gly Thr 475 480 485			2155
act gta ttt ggt gga tta tca tta gcg tta ggt gca gcg tta tta gct Thr Val Phe Gly Gly Leu Ser Leu Ala Leu Gly Ala Ala Leu Leu Ala 490 495 500			2203
gga cgt cgt cgc gaa cta taa aaacaaacaa tacacaacga tagatatc Gly Arg Arg Arg Glu Leu			2252

505

<210> 88 <211> 508 <212> PRT <213> Staphylococcus aureus <400> 88

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 1 5 10 15

Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro
 20 25 30

Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr
 35 40 45

Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe
 50 55 60

Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly
 65 70 75 80

Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln
 85 90 95

Gln Asn Lys Phe Asn Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu
 100 105 110

Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser
 115 120 125

Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys
 130 135 140

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys
 145 150 155 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn
 165 170 175

Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
 180 185 190

Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln
 195 200 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe
 210 215 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly
225 230 235 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu
245 250 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn
260 265 270

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu
275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu
305 310 315 320

Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys
325 330 335

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
340 345 350

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
355 360 365

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
370 375 380

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
385 390 395 400

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His Val
405 410 415

Val Lys Pro Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr
420 425 430

Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met
435 440 445

Ile Lys Pro Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Ala Asn
450 455 460

His Ala Asp Ala Asn Lys Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu
465 470 475 480

Asn Pro Phe Ile Gly Thr Thr Val Phe Gly Gly Leu Ser Leu Ala Leu
485 490 495

Gly Ala Ala Leu Leu Ala Gly Arg Arg Arg Glu Leu
500 505

<210> 89 <211> 324 <212> DNA <213> Staphylococcus aureus <220>
<221> CDS <222> (1)..(306) <223>

<220> <221> CDS <222> (310)..(315) <223>

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1 5 10 15
ggt gga cag caa atg ggt cgg gat ctg tac gac gat gac gat aag gat 96
Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp
20 25 30
ccg agc tcg aga gga tcc aaa gct gat gcg caa caa aat aac ttc aac 144
Pro Ser Ser Arg Gly Ser Lys Ala Asp Ala Gln Gln Asn Asn Phe Asn
35 40 45
aaa gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta 192
Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu
50 55 60
aac gaa gcg caa cgc aac ggc ttc att caa agt ctt aaa gac gac cca 240
Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro
65 70 75 80
agc caa agc act aac gtt tta ggt gaa gct aaa aaa tta aac gaa tct 288
Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser
85 90 95
caa gca ggg aaa cta gtt tag aaa gct tgcacggc 324
Gln Ala Gly Lys Leu Val Lys Ala
100

<210> 90 <211> 104 <212> PRT <213> Staphylococcus aureus <400> 90

Met Arg Gly Ser His His His His His His Gly Met Ala Ser Met Thr
1 5 10 15

Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp
20 25 30

Pro Ser Ser Arg Gly Ser Lys Ala Asp Ala Gln Gln Asn Asn Phe Asn
35 40 45

Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu
50 55 60

Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro
65 70 75 80

Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser
85 90 95

Gln Ala Gly Lys Leu Val Lys Ala
100

<210> 91 <211> 60 <212> PRT <213> Staphylococcus aureus <400> 91

Thr Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu
1 5 10 15

Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile
20 25 30

Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu
35 40 45

Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala
50 55 60

<210> 92 <211> 2593 <212> DNA <213> Homo sapiens <220> <221> CDS
<222> (56)..(508) <223>

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Met
1

tat gga aaa ata atc ttt gta tta cta ttg tca gca att gtg agc ata 106
Tyr Gly Lys Ile Ile Phe Val Leu Leu Leu Ser Ala Ile Val Ser Ile
5 10 15

tca gca tca agt acc act ggt gtg gca atg cac act tca acc tct tct 154
Ser Ala Ser Ser Thr Thr Gly Val Ala Met His Thr Ser Thr Ser Ser
20 25 30

tca gtc aca aag agt tac atc tca tca cag aca aat gat acg cac aaa 202
Ser Val Thr Lys Ser Tyr Ile Ser Ser Gln Thr Asn Asp Thr His Lys
35 40 45

cgg gac aca tat gca gcc act cct aga gct cat gaa gtt tca gaa att 250
Arg Asp Thr Tyr Ala Ala Thr Pro Arg Ala His Glu Val Ser Glu Ile
50 55 60 65

tct gtt aga act gtt tac cct cca gaa gag gaa acc gga gaa agg gta	298
Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg Val	
70 75 80	
caa ctt gcc cat cat ttc tct gaa cca gag ata aca ctc att att ttt	346
Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Leu Ile Ile Phe	
85 90 95	
ggg gtg atg gct ggt gtt att gga acg atc ctc tta att tct tac ggt	394
Gly Val Met Ala Gly Val Ile Gly Thr Ile Leu Leu Ile Ser Tyr Gly	
100 105 110	
att cgc cga ctg ata aag aaa agc cca tct gat gta aaa cct ctc ccc	442
Ile Arg Arg Leu Ile Lys Lys Ser Pro Ser Asp Val Lys Pro Leu Pro	
115 120 125	
tca cct gac aca gac gtg cct tta agt tct gtt gaa ata gaa aat cca	490
Ser Pro Asp Thr Asp Val Pro Leu Ser Ser Val Glu Ile Glu Asn Pro	
130 135 140 145	
gag aca agt gat caa tga gaatctgttc accaaaccaa atgtggaaag	538
Glu Thr Ser Asp Gln	
150	
aacacaaaga agacataaga cttcagtcaa gtgaaaaatt aacatgtgga ctggacactc	598
caataaatta tatacctgcc taagttgtac aatttcagaa tgcaattttc attataatga	658
gttccagtga ctcaatgatg gggaaaaaaaa tctctgtctca ttaatatattc aagataaaga	718
acaaatgttt ccttgaatgc ttgcttttgt gtggttagcat aattttttaga attgtttgag	778
aattctgata caaaacttta gttgaattca tctacgtttg tttaatatta acttaaccta	838
ttctattgta ttataatgat gattctgtca aatgaaaggc ttgaaatacc tagatgaagt	898
ttagattttc ttctatttgt aaacttttga gtctggtttc attgttttaa ataaattaag	958
gggacactaa agtctatca ttcatctctt cattctgaac aggcaagata taatattaca	1018
tgaatgatta ctatatatttg ttcacactaa taaagcttat gctcagaaat gccatacaca	1078
cacacaaaca cacacattta tcatttaatg cataaatcaa cacaaaagggt tttcccatta	1138
atatgaaata ttacatatat ataagtcca tttttaaaat aatttgtcta acagtagaac	1198
tatgtcggag cactcactga agcttcgatt tcccactgaa agagttattt gttgtaagta	1258
gagttatccc ggagaaggaa aaagaactta cgacctttct ttataacaga aagctcaact	1318
ctaaattcaa caagatgtgc aaaccggaca tgcaggtgaa tattttaata ggttactata	1378
aggttctcaa ttaaattctt taatctgtcc agtcccagtt tctcttatta ataaaacttt	1438
ggaaattgct ttaaaccatt taaaggaaa ttctagatat agaaactaaa ggactgtgac	1498
tatacagtgt cactcatttg tagtaaaact taaaaagcaa aaacaaaaaa caaaaaagac	1558
cttctgtga tactttattt ccgaactaat aaaaatctat atgacttttt attattgtgt	1618

gataaccaag taaatgtttt ctatttttga tatttttcagg catggtaaca gaaattttacc 1678
 ttttaataaa ttaaaaaatc taaattttta cctacttgta tgttcggaga gtgtttttgt 1738
 actatattga ctacttaaaa tagagaatga gactaagaag ggaacatttc tgttgatata 1798
 tgttttttaa aagtaatttt taagagcatt attaggttaa tttaatccaa ttaatgaccc 1858
 aaatgccaaag gtaattttta atttacattt ttaataaaag caacatgttg aaacaagaga 1918
 gggtagagatt aacctttttg ctaaagtaat ttacaagtca aagacaggaa gagatcagag 1978
 tgaatgtgcc ttcttaacca gagctacaga atttagtgaa taattaaagt acaaactgct 2038
 ttgacctcct tgaacttttc caagcaattt ctctgtactt ctatatatga atgtcttagc 2098
 caattttctg ctactataac agaatacgac agactgggta atttaaaaag aaaagaaatt 2158
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 gtaactgatg agaaccttct tactgcatga taacaaagca gcaaggcaag caaaagcgta 2278
 agatgaagag agaggaaatg aagccaaaca catcctttca tcagaagccc attccctcta 2338
 taaggcgta ctacatttat gagaatggag tcctcatgac ctaatcgtga ccttaaaggc 2398
 cctcccaac actgttaciaa tggcaattaa atttcaacaa aggttcacaga ggtgacattc 2458
 gaatcagcaa tgaaattttc atagttaaat ttggtattcg tgggggaaga aatgaccatt 2518
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 agataccatg acccc 2593

<210> 93 <211> 150 <212> PRT <213> Homo sapiens <400> 93

Met Tyr Gly Lys Ile Ile Phe Val Leu Leu Leu Ser Ala Ile Val Ser
1 5 10 15

Ile Ser Ala Ser Ser Thr Thr Gly Val Ala Met His Thr Ser Thr Ser
20 25 30

Ser Ser Val Thr Lys Ser Tyr Ile Ser Ser Gln Thr Asn Asp Thr His
35 40 45

Lys Arg Asp Thr Tyr Ala Ala Thr Pro Arg Ala His Glu Val Ser Glu
50 55 60

Ile Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg
65 70 75 80

Val Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Leu Ile Ile
85 90 95

Phe Gly Val Met Ala Gly Val Ile Gly Thr Ile Leu Leu Ile Ser Tyr
 100 105 110

Gly Ile Arg Arg Leu Ile Lys Lys Ser Pro Ser Asp Val Lys Pro Leu
 115 120 125

Pro Ser Pro Asp Thr Asp Val Pro Leu Ser Ser Val Glu Ile Glu Asn
 130 135 140

Pro Glu Thr Ser Asp Gln
 145 150

<210> 94 <211> 5185 <212> DNA <213> Homo sapiens <220> <221> CDS
 <222> (104)..(4474) <223>

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 gccctcctgt ccatacaggag aaggaaagga taaaccctgg gcc atg agg cta ccc 115
 Met Arg Leu Pro
 1
 ctg ctc ctg gtt ttt gcc tct gtc att ccg ggt gct gtt ctc cta ctg 163
 Leu Leu Leu Val Phe Ala Ser Val Ile Pro Gly Ala Val Leu Leu Leu
 5 10 15 20
 gac acc agg caa ttt tta atc tat aat gaa gat cac aag cgc tgc gtg 211
 Asp Thr Arg Gln Phe Leu Ile Tyr Asn Glu Asp His Lys Arg Cys Val
 25 30 35
 gat gca gtg agt ccc agt gcc gtc caa acc gca gct tgc aac cag gat 259
 Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala Cys Asn Gln Asp
 40 45 50
 gcc gaa tca cag aaa ttc cga tgg gtg tcc gaa tct cag att atg agt 307
 Ala Glu Ser Gln Lys Phe Arg Trp Val Ser Glu Ser Gln Ile Met Ser
 55 60 65
 gtt gca ttt aaa tta tgc ctg gga gtg cca tca aaa aca gac tgg gtt 355
 Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys Thr Asp Trp Val
 70 75 80
 gct atc act ctc tat gcc tgt gac tca aaa agt gaa ttt cag aaa tgg 403
 Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu Phe Gln Lys Trp
 85 90 95 100
 gag tgc aaa aat gac aca ctt ttg ggg atc aaa gga gaa gat tta ttt 451
 Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly Glu Asp Leu Phe
 105 110 115
 ttt aac tac ggc aac aga caa gaa aag aat att atg ctc tac aag gga 499
 Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met Leu Tyr Lys Gly
 120 125 130
 tcg ggt tta tgg agc agg tgg aag atc tat gga acc aca gac aat ctg 547

Ser Gly Leu Trp Ser Arg Trp Lys Ile Tyr Gly Thr Thr Asp Asn Leu	
135 140 145	
tgc tcc aga ggt tat gaa gcc atg tat acg cta cta ggc aat gcc aat	595
Cys Ser Arg Gly Tyr Glu Ala Met Tyr Thr Leu Leu Gly Asn Ala Asn	
150 155 160	
gga gca acc tgt gca ttc ccg ttc aag ttt gaa aac aag tgg tac gca	643
Gly Ala Thr Cys Ala Phe Pro Phe Lys Phe Glu Asn Lys Trp Tyr Ala	
165 170 175 180	
gat tgc acg agt gct ggg cgg tcg gat gga tgg ctc tgg tgc gga acc	691
Asp Cys Thr Ser Ala Gly Arg Ser Asp Gly Trp Leu Trp Cys Gly Thr	
185 190 195	
act act gac tat gac aca gac aag cta ttt gga tat tgt cca ttg aaa	739
Thr Thr Asp Tyr Asp Thr Asp Lys Leu Phe Gly Tyr Cys Pro Leu Lys	
200 205 210	
ttt gag ggc agt gaa agc tta tgg aat aaa gac ccg ctg acc agc gtt	787
Phe Glu Gly Ser Glu Ser Leu Trp Asn Lys Asp Pro Leu Thr Ser Val	
215 220 225	
tcc tac cag ata aac tcc aaa tcc gct tta acg tgg cac caa gcg agg	835
Ser Tyr Gln Ile Asn Ser Lys Ser Ala Leu Thr Trp His Gln Ala Arg	
230 235 240	
aaa agc tgc caa caa cag aac gct gag ctc ctg agc atc aca gag ata	883
Lys Ser Cys Gln Gln Gln Asn Ala Glu Leu Leu Ser Ile Thr Glu Ile	
245 250 255 260	
cat gag caa aca tac ctg aca gga tta acc agt tcc ttg acc tca gga	931
His Glu Gln Thr Tyr Leu Thr Gly Leu Thr Ser Ser Leu Thr Ser Gly	
265 270 275	
ctc tgg att gga ctt aac agt ctg agc ttc aac agc ggt tgg cag tgg	979
Leu Trp Ile Gly Leu Asn Ser Leu Ser Phe Asn Ser Gly Trp Gln Trp	
280 285 290	
agt gac cgc agt cct ttc cga tat ttg aac tgg tta cca gga agt cca	1027
Ser Asp Arg Ser Pro Phe Arg Tyr Leu Asn Trp Leu Pro Gly Ser Pro	
295 300 305	
tca gct gaa cct gga aaa agc tgt gtg tca cta aat cct gga aaa aat	1075
Ser Ala Glu Pro Gly Lys Ser Cys Val Ser Leu Asn Pro Gly Lys Asn	
310 315 320	
gct aaa tgg gaa aat ctg gaa tgt gtt cag aaa ctg ggc tat att tgc	1123
Ala Lys Trp Glu Asn Leu Glu Cys Val Gln Lys Leu Gly Tyr Ile Cys	
325 330 335 340	
aaa aag ggc aac acc act tta aat tct ttt gtt att ccc tca gaa agt	1171
Lys Lys Gly Asn Thr Thr Leu Asn Ser Phe Val Ile Pro Ser Glu Ser	
345 350 355	
gat gtg cct act cac tgt cct agt cag tgg tgg ccg tat gcc ggt cac	1219
Asp Val Pro Thr His Cys Pro Ser Gln Trp Trp Pro Tyr Ala Gly His	
360 365 370	
tgt tac aag att cac aga gat gag aaa aaa atc cag agg gat gct ctg	1267

Cys	Tyr	Lys	Ile	His	Arg	Asp	Glu	Lys	Lys	Ile	Gln	Arg	Asp	Ala	Leu		
		375					380					385					
acc	acc	tgc	agg	aag	gaa	ggc	ggt	gac	ctc	aca	agt	atc	cac	acc	atc		1315
Thr	Thr	Cys	Arg	Lys	Glu	Gly	Gly	Asp	Leu	Thr	Ser	Ile	His	Thr	Ile		
		390				395					400						
gag	gaa	ttg	gac	ttt	att	atc	tcc	cag	cta	gga	tat	gag	cca	aat	gac		1363
Glu	Glu	Leu	Asp	Phe	Ile	Ile	Ser	Gln	Leu	Gly	Tyr	Glu	Pro	Asn	Asp		
405					410					415					420		
gaa	ttg	tgg	atc	ggc	tta	aat	gac	att	aag	att	caa	atg	tac	ttt	gag		1411
Glu	Leu	Trp	Ile	Gly	Leu	Asn	Asp	Ile	Lys	Ile	Gln	Met	Tyr	Phe	Glu		
				425					430					435			
tgg	agt	gat	ggg	acc	cct	gta	acg	ttt	acc	aaa	tgg	ctt	cgt	gga	gaa		1459
Trp	Ser	Asp	Gly	Thr	Pro	Val	Thr	Phe	Thr	Lys	Trp	Leu	Arg	Gly	Glu		
			440					445					450				
cca	agc	cat	gaa	aac	aac	aga	cag	gag	gat	tgt	gtg	gtg	atg	aaa	ggc		1507
Pro	Ser	His	Glu	Asn	Asn	Arg	Gln	Glu	Asp	Cys	Val	Val	Met	Lys	Gly		
		455					460						465				
aag	gat	ggg	tac	tgg	gca	gat	cgg	ggc	tgt	gag	tgg	cct	ctt	ggc	tac		1555
Lys	Asp	Gly	Tyr	Trp	Ala	Asp	Arg	Gly	Cys	Glu	Trp	Pro	Leu	Gly	Tyr		
	470					475					480						
atc	tgc	aag	atg	aaa	tca	cga	agc	caa	ggt	cca	gaa	ata	gtg	gaa	gtc		1603
Ile	Cys	Lys	Met	Lys	Ser	Arg	Ser	Gln	Gly	Pro	Glu	Ile	Val	Glu	Val		
485					490					495					500		
gaa	aaa	ggc	tgc	agg	aaa	ggc	tgg	aaa	aaa	cat	cac	ttt	tac	tgc	tat		1651
Glu	Lys	Gly	Cys	Arg	Lys	Gly	Trp	Lys	Lys	His	His	Phe	Tyr	Cys	Tyr		
				505					510					515			
atg	att	gga	cat	acg	ctt	tca	aca	ttt	gca	gaa	gca	aac	caa	acc	tgt		1699
Met	Ile	Gly	His	Thr	Leu	Ser	Thr	Phe	Ala	Glu	Ala	Asn	Gln	Thr	Cys		
			520					525					530				
aat	aat	gag	aat	gct	tat	tta	aca	act	att	gaa	gac	aga	tat	gaa	caa		1747
Asn	Asn	Glu	Asn	Ala	Tyr	Leu	Thr	Thr	Ile	Glu	Asp	Arg	Tyr	Glu	Gln		
		535					540					545					
gcc	ttc	ctg	act	agt	ttc	gtt	ggc	tta	agg	cct	gaa	aaa	tat	ttc	tgg		1795
Ala	Phe	Leu	Thr	Ser	Phe	Val	Gly	Leu	Arg	Pro	Glu	Lys	Tyr	Phe	Trp		
	550					555					560						
aca	gga	ctt	tca	gat	ata	caa	acc	aaa	ggg	act	ttt	cag	tgg	acc	atc		1843
Thr	Gly	Leu	Ser	Asp	Ile	Gln	Thr	Lys	Gly	Thr	Phe	Gln	Trp	Thr	Ile		
565					570					575					580		
gag	gaa	gag	gtt	cgg	ttc	acc	cac	tgg	aat	tca	gat	atg	cca	ggg	cga		1891
Glu	Glu	Glu	Val	Arg	Phe	Thr	His	Trp	Asn	Ser	Asp	Met	Pro	Gly	Arg		
				585					590					595			
aag	cca	ggg	tgt	gtt	gcc	atg	aga	acc	ggg	att	gca	ggg	ggc	tta	tgg		1939
Lys	Pro	Gly	Cys	Val	Ala	Met	Arg	Thr	Gly	Ile	Ala	Gly	Gly	Leu	Trp		
			600					605					610				
gat	gtt	ttg	aaa	tgt	gat	gaa	aag	gca	aaa	ttt	gtg	tgc	aag	cac	tgg		1987

Asp	Val	Leu	Lys	Cys	Asp	Glu	Lys	Ala	Lys	Phe	Val	Cys	Lys	His	Trp		
		615						620					625				
gca	gaa	gga	gta	acc	cac	cca	ccg	aag	ccc	acg	acg	act	ccc	gaa	ccc	2035	
Ala	Glu	Gly	Val	Thr	His	Pro	Pro	Lys	Pro	Thr	Thr	Thr	Pro	Glu	Pro		
		630					635					640					
aaa	tgt	ccg	gag	gat	tgg	ggc	gcc	agc	agt	aga	aca	agc	ttg	tgt	ttc	2083	
Lys	Cys	Pro	Glu	Asp	Trp	Gly	Ala	Ser	Ser	Arg	Thr	Ser	Leu	Cys	Phe		
		645			650					655					660		
aag	ctg	tat	gca	aaa	gga	aaa	cat	gag	aag	aaa	acg	tgg	ttt	gaa	tct	2131	
Lys	Leu	Tyr	Ala	Lys	Gly	Lys	His	Glu	Lys	Lys	Thr	Trp	Phe	Glu	Ser		
				665					670					675			
cga	gat	ttt	tgt	cga	gct	ctg	ggc	gga	gac	tta	gct	agc	atc	aat	aac	2179	
Arg	Asp	Phe	Cys	Arg	Ala	Leu	Gly	Gly	Asp	Leu	Ala	Ser	Ile	Asn	Asn		
			680					685					690				
aaa	gag	gaa	cag	caa	aca	ata	tgg	cga	tta	ata	aca	gct	agt	gga	agc	2227	
Lys	Glu	Glu	Gln	Gln	Thr	Ile	Trp	Arg	Leu	Ile	Thr	Ala	Ser	Gly	Ser		
		695					700					705					
tac	cac	aaa	ctg	ttt	tgg	ttg	gga	ttg	aca	tat	gga	agc	cct	tca	gaa	2275	
Tyr	His	Lys	Leu	Phe	Trp	Leu	Gly	Leu	Thr	Tyr	Gly	Ser	Pro	Ser	Glu		
		710				715					720						
ggt	ttt	act	tgg	agt	gat	ggc	tct	cct	gtt	tca	tat	gaa	aac	tgg	gct	2323	
Gly	Phe	Thr	Trp	Ser	Asp	Gly	Ser	Pro	Val	Ser	Tyr	Glu	Asn	Trp	Ala		
					730					735					740		
tat	gga	gaa	cct	aat	aat	tat	caa	aat	gtt	gaa	tac	tgt	ggt	gag	ctg	2371	
Tyr	Gly	Glu	Pro	Asn	Asn	Tyr	Gln	Asn	Val	Glu	Tyr	Cys	Gly	Glu	Leu		
				745					750					755			
aaa	ggt	gac	cct	act	atg	tct	tgg	aat	gat	att	aat	tgt	gaa	cac	ctt	2419	
Lys	Gly	Asp	Pro	Thr	Met	Ser	Trp	Asn	Asp	Ile	Asn	Cys	Glu	His	Leu		
			760					765					770				
aac	aac	tgg	att	tgc	cag	ata	caa	aaa	gga	caa	aca	cca	aaa	cct	gag	2467	
Asn	Asn	Trp	Ile	Cys	Gln	Ile	Gln	Lys	Gly	Gln	Thr	Pro	Lys	Pro	Glu		
		775					780					785					
cca	aca	cca	gct	cct	caa	gac	aat	cca	cca	gtt	act	gaa	gat	ggg	tgg	2515	
Pro	Thr	Pro	Ala	Pro	Gln	Asp	Asn	Pro	Pro	Val	Thr	Glu	Asp	Gly	Trp		
		790				795					800						
gtt	att	tac	aaa	gac	tac	cag	tat	tat	ttc	agc	aaa	gag	aag	gaa	acc	2563	
Val	Ile	Tyr	Lys	Asp	Tyr	Gln	Tyr	Tyr	Phe	Ser	Lys	Glu	Lys	Glu	Thr		
		805			810					815					820		
atg	gac	aat	gcg	cga	gcg	ttt	tgc	aag	agg	aat	ttt	ggt	gat	ctt	gtt	2611	
Met	Asp	Asn	Ala	Arg	Ala	Phe	Cys	Lys	Arg	Asn	Phe	Gly	Asp	Leu	Val		
				825					830					835			
tct	att	caa	agt	gaa	agt	gaa	aag	aag	ttt	cta	tgg	aaa	tat	gta	aac	2659	
Ser	Ile	Gln	Ser	Glu	Ser	Glu	Lys	Lys	Phe	Leu	Trp	Lys	Tyr	Val	Asn		
			840					845					850				
aga	aat	gat	gca	cag	tct	gca	tat	ttt	att	ggt	tta	ttg	atc	agc	ttg	2707	

Arg	Asn	Asp	Ala	Gln	Ser	Ala	Tyr	Phe	Ile	Gly	Leu	Leu	Ile	Ser	Leu		
	855						860					865					
gat	aaa	aag	ttt	gct	tgg	atg	gat	gga	agc	aaa	gtg	gat	tac	gtg	tct		2755
Asp	Lys	Lys	Phe	Ala	Trp	Met	Asp	Gly	Ser	Lys	Val	Asp	Tyr	Val	Ser		
	870					875					880						
tgg	gcc	aca	ggg	gaa	ccc	aat	ttt	gca	aat	gaa	gat	gaa	aac	tgt	gtg		2803
Trp	Ala	Thr	Gly	Glu	Pro	Asn	Phe	Ala	Asn	Glu	Asp	Glu	Asn	Cys	Val		
885					890					895				900			
acc	atg	tat	tca	aat	tca	ggg	ttt	tgg	aat	gac	att	aac	tgt	ggc	tat		2851
Thr	Met	Tyr	Ser	Asn	Ser	Gly	Phe	Trp	Asn	Asp	Ile	Asn	Cys	Gly	Tyr		
				905					910					915			
cca	aac	gcc	ttc	att	tgc	cag	cga	cat	aac	agt	agt	atc	aat	gct	acc		2899
Pro	Asn	Ala	Phe	Ile	Cys	Gln	Arg	His	Asn	Ser	Ser	Ile	Asn	Ala	Thr		
			920					925					930				
aca	gtt	atg	cct	acc	atg	ccc	tcg	gtc	cca	tca	ggg	tgc	aag	gaa	ggg		2947
Thr	Val	Met	Pro	Thr	Met	Pro	Ser	Val	Pro	Ser	Gly	Cys	Lys	Glu	Gly		
	935						940					945					
tgg	aat	ttc	tac	agc	aac	aag	tgt	ttc	aaa	atc	ttt	gga	ttt	atg	gaa		2995
Trp	Asn	Phe	Tyr	Ser	Asn	Lys	Cys	Phe	Lys	Ile	Phe	Gly	Phe	Met	Glu		
	950					955					960						
gaa	gaa	aga	aaa	aat	tgg	caa	gag	gca	cga	aaa	gct	tgt	ata	ggc	ttt		3043
Glu	Glu	Arg	Lys	Asn	Trp	Gln	Glu	Ala	Arg	Lys	Ala	Cys	Ile	Gly	Phe		
965					970					975				980			
gga	ggg	aat	ctg	gtc	tcc	ata	caa	aat	gaa	aaa	gag	caa	gca	ttt	ctt		3091
Gly	Gly	Asn	Leu	Val	Ser	Ile	Gln	Asn	Glu	Lys	Glu	Gln	Ala	Phe	Leu		
				985					990					995			
acc	tat	cac	atg	aag	gac	tcc	act	ttc	agt	gcc	tgg	act	ggg	ctg			3136
Thr	Tyr	His	Met	Lys	Asp	Ser	Thr	Phe	Ser	Ala	Trp	Thr	Gly	Leu			
			1000					1005					1010				
aat	gat	gtc	aat	tca	gaa	cac	acg	ttc	ctt	tgg	acg	gat	gga	cga			3181
Asn	Asp	Val	Asn	Ser	Glu	His	Thr	Phe	Leu	Trp	Thr	Asp	Gly	Arg			
			1015					1020					1025				
gga	gtc	cat	tac	aca	aac	tgg	ggg	aaa	ggg	tac	cct	ggg	gga	aga			3226
Gly	Val	His	Tyr	Thr	Asn	Trp	Gly	Lys	Gly	Tyr	Pro	Gly	Gly	Arg			
			1030					1035					1040				
aga	agc	agt	ctt	tct	tat	gaa	gat	gct	gac	tgt	gtt	gtt	att	att			3271
Arg	Ser	Ser	Leu	Ser	Tyr	Glu	Asp	Ala	Asp	Cys	Val	Val	Ile	Ile			
			1045					1050					1055				
gga	ggg	gca	tca	aat	gaa	gca	gga	aaa	tgg	atg	gat	gat	acc	tgc			3316
Gly	Gly	Ala	Ser	Asn	Glu	Ala	Gly	Lys	Trp	Met	Asp	Asp	Thr	Cys			
			1060					1065					1070				
gac	agt	aaa	cga	ggc	tac	ata	tgc	cag	aca	cga	tcc	gac	cct	tcc			3361
Asp	Ser	Lys	Arg	Gly	Tyr	Ile	Cys	Gln	Thr	Arg	Ser	Asp	Pro	Ser			
			1075					1080					1085				
ttg	act	aat	cct	cca	gca	acg	att	caa	aca	gat	ggc	ttt	gtt	aaa			3406

Leu Thr Asn Pro	Pro Ala Thr Ile	Gln Thr Asp Gly Phe Val Lys	
1090		1095 1100	
tat ggc aaa agc	agc tat tca ctc atg	aga caa aaa ttt caa tgg	3451
Tyr Gly Lys Ser	Ser Tyr Ser Leu Met	Arg Gln Lys Phe Gln Trp	
1105	1110	1115	
cat gaa gcg gag	aca tac tgc aag ctt	cac aat tcc ctt ata gcc	3496
His Glu Ala Glu	Thr Tyr Cys Lys Leu	His Asn Ser Leu Ile Ala	
1120	1125	1130	
agc att ctg gat	ccc tac agt aat gca	ttt gcg tgg ctg cag atg	3541
Ser Ile Leu Asp	Pro Tyr Ser Asn Ala	Phe Ala Trp Leu Gln Met	
1135	1140	1145	
gaa aca tct aat	gaa cgt gtg tgg atc	gcc ctg aac agt aac ttg	3586
Glu Thr Ser Asn	Glu Arg Val Trp Ile	Ala Leu Asn Ser Asn Leu	
1150	1155	1160	
act gat aat caa	tac act tgg act gat	aag tgg agg gtg agg tac	3631
Thr Asp Asn Gln	Tyr Thr Trp Thr Asp	Lys Trp Arg Val Arg Tyr	
1165	1170	1175	
act aac tgg gct	gct gat gag ccc aaa	ttg aaa tca gca tgt gtt	3676
Thr Asn Trp Ala	Ala Asp Glu Pro Lys	Leu Lys Ser Ala Cys Val	
1180	1185	1190	
tat ctg gat ctt	gat ggc tac tgg aag	aca gca cat tgc aat gaa	3721
Tyr Leu Asp Leu	Asp Gly Tyr Trp Lys	Thr Ala His Cys Asn Glu	
1195	1200	1205	
agt ttt tac ttt	ctc tgt aaa aga tca	gat gaa atc cct gct act	3766
Ser Phe Tyr Phe	Leu Cys Lys Arg Ser	Asp Glu Ile Pro Ala Thr	
1210	1215	1220	
gaa ccc cca caa	ctg cct ggc aga tgc	ccg gag tca gat cac aca	3811
Glu Pro Pro Gln	Leu Pro Gly Arg Cys	Pro Glu Ser Asp His Thr	
1225	1230	1235	
gca tgg att cct	ttc cat ggt cac tgt	tac tat att gag tcc tca	3856
Ala Trp Ile Pro	Phe His Gly His Cys	Tyr Tyr Ile Glu Ser Ser	
1240	1245	1250	
tat aca aga aac	tgg ggc caa gct tct	ctg gaa tgt ctt cga atg	3901
Tyr Thr Arg Asn	Trp Gly Gln Ala Ser	Leu Glu Cys Leu Arg Met	
1255	1260	1265	
ggt tcc tct ctg	gtt tcc att gaa agt	gct gca gaa tcc agt ttt	3946
Gly Ser Ser Leu	Val Ser Ile Glu Ser	Ala Ala Glu Ser Ser Phe	
1270	1275	1280	
ctg tca tat cgg	gtt gag cca ctt aaa	agt aaa acc aat ttt tgg	3991
Leu Ser Tyr Arg	Val Glu Pro Leu Lys	Ser Lys Thr Asn Phe Trp	
1285	1290	1295	
ata gga ttg ttc	aga aat gtt gaa ggg	acg tgg ctg tgg ata aat	4036
Ile Gly Leu Phe	Arg Asn Val Glu Gly	Thr Trp Leu Trp Ile Asn	
1300	1305	1310	
aac agt ccg gtc	tcc ttt gtc aac tgg	aac aca gga gat ccc tct	4081

Asn Ser Pro Val	Ser Phe Val Asn Trp	Asn Thr Gly Asp Pro Ser	
1315	1320	1325	
ggt gaa cgg aat	gat tgt gta gct tta	cat gcg tct tct ggg ttt	4126
Gly Glu Arg Asn	Asp Cys Val Ala Leu	His Ala Ser Ser Gly Phe	
1330	1335	1340	
tgg agt aat att	cac tgt tct tcc tac	aaa gga tat att tgt aaa	4171
Trp Ser Asn Ile	His Cys Ser Ser Tyr	Lys Gly Tyr Ile Cys Lys	
1345	1350	1355	
aga cca aaa att	att gat gct aaa cct	act cat gaa tta ctt aca	4216
Arg Pro Lys Ile	Ile Asp Ala Lys Pro	Thr His Glu Leu Leu Thr	
1360	1365	1370	
aca aaa gct gac	aca agg aag atg gac	cct tct aaa ccg tct tcc	4261
Thr Lys Ala Asp	Thr Arg Lys Met Asp	Pro Ser Lys Pro Ser Ser	
1375	1380	1385	
aac gtg gcc gga	gta gtc atc att gtg	atc ctc ctg att tta acg	4306
Asn Val Ala Gly	Val Val Ile Ile Val	Ile Leu Leu Ile Leu Thr	
1390	1395	1400	
ggt gct ggc ctt	gcc gcc tat ttc ttt	tat aag aaa aga cgt gtg	4351
Gly Ala Gly Leu	Ala Ala Tyr Phe Phe	Tyr Lys Lys Arg Arg Val	
1405	1410	1415	
cac cta cct caa	gag ggc gcc ttt gaa	aac act ctg tat ttt aac	4396
His Leu Pro Gln	Glu Gly Ala Phe Glu	Asn Thr Leu Tyr Phe Asn	
1420	1425	1430	
agt cag tca agc	cca gga act agt gat	atg aaa gat ctc gtg ggc	4441
Ser Gln Ser Ser	Pro Gly Thr Ser Asp	Met Lys Asp Leu Val Gly	
1435	1440	1445	
aat att gaa cag	aat gaa cac tcg gtc	atc tag tacctcaatg	4484
Asn Ile Glu Gln	Asn Glu His Ser Val	Ile	
1450	1455		
cgattctgag atatttgaat	ttcataaaat tgtaactgaa	attttaaatt tttagttcaa	4544
tgtgattgtt ttctttaaaa	tgagtactga attgtactgg	tctgtccttt tttcctttgc	4604
ctaattgaag aaataattgc	ttgtttttcta gcctggcaag	atattttcat aaaagagggga	4664
taacaatgct gattactacc	ttttaaaata ttttagataa	atgcacagca ccacagcacc	4724
acatctaagc attagtgatg	ggtagctgat gtcagcttca	tgtggatttt aagcactcta	4784
gaaacaatga agcttcttgg	catatttttaa ggagctccca	aaatgtgtta cctattaaat	4844
tgtaactcag caagtagaag	accatttgaa aagtcaggta	caaatttcct caagtggcat	4904
aaaaatgtag tcagttttct	cttttaccag tttttatttc	caactccaatt atttagaact	4964
ttattttgtac atgtgcagaa	gaataaggca gctgagaatc	ttgtttcccc caagagagtt	5024
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ggatgtgaaa taaaactgta	aatttgcata actggatgta	cttagataat gtgaaataaa	5144

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5185

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20 25 30Lys Arg Cys Val Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala
35 40 45Cys Asn Gln Asp Ala Glu Ser Gln Lys Phe Arg Trp Val Ser Glu Ser
50 55 60Gln Ile Met Ser Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys
65 70 75 80Thr Asp Trp Val Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu
85 90 95Phe Gln Lys Trp Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly
100 105 110Glu Asp Leu Phe Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met
115 120 125Leu Tyr Lys Gly Ser Gly Leu Trp Ser Arg Trp Lys Ile Tyr Gly Thr
130 135 140Thr Asp Asn Leu Cys Ser Arg Gly Tyr Glu Ala Met Tyr Thr Leu Leu
145 150 155 160Gly Asn Ala Asn Gly Ala Thr Cys Ala Phe Pro Phe Lys Phe Glu Asn
165 170 175Lys Trp Tyr Ala Asp Cys Thr Ser Ala Gly Arg Ser Asp Gly Trp Leu
180 185 190Trp Cys Gly Thr Thr Thr Asp Tyr Asp Thr Asp Lys Leu Phe Gly Tyr
195 200 205Cys Pro Leu Lys Phe Glu Gly Ser Glu Ser Leu Trp Asn Lys Asp Pro
210 215 220

Leu Thr Ser Val Ser Tyr Gln Ile Asn Ser Lys Ser Ala Leu Thr Trp
225 230 235 240

His Gln Ala Arg Lys Ser Cys Gln Gln Gln Asn Ala Glu Leu Leu Ser
245 250 255

Ile Thr Glu Ile His Glu Gln Thr Tyr Leu Thr Gly Leu Thr Ser Ser
260 265 270

Leu Thr Ser Gly Leu Trp Ile Gly Leu Asn Ser Leu Ser Phe Asn Ser
275 280 285

Gly Trp Gln Trp Ser Asp Arg Ser Pro Phe Arg Tyr Leu Asn Trp Leu
290 295 300

Pro Gly Ser Pro Ser Ala Glu Pro Gly Lys Ser Cys Val Ser Leu Asn
305 310 315 320

Pro Gly Lys Asn Ala Lys Trp Glu Asn Leu Glu Cys Val Gln Lys Leu
325 330 335

Gly Tyr Ile Cys Lys Lys Gly Asn Thr Thr Leu Asn Ser Phe Val Ile
340 345 350

Pro Ser Glu Ser Asp Val Pro Thr His Cys Pro Ser Gln Trp Trp Pro
355 360 365

Tyr Ala Gly His Cys Tyr Lys Ile His Arg Asp Glu Lys Lys Ile Gln
370 375 380

Arg Asp Ala Leu Thr Thr Cys Arg Lys Glu Gly Gly Asp Leu Thr Ser
385 390 395 400

Ile His Thr Ile Glu Glu Leu Asp Phe Ile Ile Ser Gln Leu Gly Tyr
405 410 415

Glu Pro Asn Asp Glu Leu Trp Ile Gly Leu Asn Asp Ile Lys Ile Gln
420 425 430

Met Tyr Phe Glu Trp Ser Asp Gly Thr Pro Val Thr Phe Thr Lys Trp
435 440 445

Leu Arg Gly Glu Pro Ser His Glu Asn Asn Arg Gln Glu Asp Cys Val
450 455 460

Val Met Lys Gly Lys Asp Gly Tyr Trp Ala Asp Arg Gly Cys Glu Trp
 465 470 475 480

Pro Leu Gly Tyr Ile Cys Lys Met Lys Ser Arg Ser Gln Gly Pro Glu
 485 490 495

Ile Val Glu Val Glu Lys Gly Cys Arg Lys Gly Trp Lys Lys His His
 500 505 510

Phe Tyr Cys Tyr Met Ile Gly His Thr Leu Ser Thr Phe Ala Glu Ala
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Asn Gln Thr Cys Asn Asn Glu Asn Ala Tyr Leu Thr Thr Ile Glu Asp
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Arg Tyr Glu Gln Ala Phe Leu Thr Ser Phe Val Gly Leu Arg Pro Glu
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Lys Tyr Phe Trp Thr Gly Leu Ser Asp Ile Gln Thr Lys Gly Thr Phe
 565 570 575

Gln Trp Thr Ile Glu Glu Glu Val Arg Phe Thr His Trp Asn Ser Asp
 580 585 590

Met Pro Gly Arg Lys Pro Gly Cys Val Ala Met Arg Thr Gly Ile Ala
 595 600 605

Gly Gly Leu Trp Asp Val Leu Lys Cys Asp Glu Lys Ala Lys Phe Val
 610 615 620

Cys Lys His Trp Ala Glu Gly Val Thr His Pro Pro Lys Pro Thr Thr
 625 630 635 640

Thr Pro Glu Pro Lys Cys Pro Glu Asp Trp Gly Ala Ser Ser Arg Thr
 645 650 655

Ser Leu Cys Phe Lys Leu Tyr Ala Lys Gly Lys His Glu Lys Lys Thr
 660 665 670

Trp Phe Glu Ser Arg Asp Phe Cys Arg Ala Leu Gly Gly Asp Leu Ala
 675 680 685

Ser Ile Asn Asn Lys Glu Glu Gln Gln Thr Ile Trp Arg Leu Ile Thr
 690 695 700

Ala Ser Gly Ser Tyr His Lys Leu Phe Trp Leu Gly Leu Thr Tyr Gly
 705 710 715 720
 Ser Pro Ser Glu Gly Phe Thr Trp Ser Asp Gly Ser Pro Val Ser Tyr
 725 730 735
 Glu Asn Trp Ala Tyr Gly Glu Pro Asn Asn Tyr Gln Asn Val Glu Tyr
 740 745 750
 Cys Gly Glu Leu Lys Gly Asp Pro Thr Met Ser Trp Asn Asp Ile Asn
 755 760 765
 Cys Glu His Leu Asn Asn Trp Ile Cys Gln Ile Gln Lys Gly Gln Thr
 770 775 780
 Pro Lys Pro Glu Pro Thr Pro Ala Pro Gln Asp Asn Pro Pro Val Thr
 785 790 795 800
 Glu Asp Gly Trp Val Ile Tyr Lys Asp Tyr Gln Tyr Tyr Phe Ser Lys
 805 810 815
 Glu Lys Glu Thr Met Asp Asn Ala Arg Ala Phe Cys Lys Arg Asn Phe
 820 825 830
 Gly Asp Leu Val Ser Ile Gln Ser Glu Ser Glu Lys Lys Phe Leu Trp
 835 840 845
 Lys Tyr Val Asn Arg Asn Asp Ala Gln Ser Ala Tyr Phe Ile Gly Leu
 850 855 860
 Leu Ile Ser Leu Asp Lys Lys Phe Ala Trp Met Asp Gly Ser Lys Val
 865 870 875 880
 Asp Tyr Val Ser Trp Ala Thr Gly Glu Pro Asn Phe Ala Asn Glu Asp
 885 890 895
 Glu Asn Cys Val Thr Met Tyr Ser Asn Ser Gly Phe Trp Asn Asp Ile
 900 905 910
 Asn Cys Gly Tyr Pro Asn Ala Phe Ile Cys Gln Arg His Asn Ser Ser
 915 920 925
 Ile Asn Ala Thr Thr Val Met Pro Thr Met Pro Ser Val Pro Ser Gly
 930 935 940

Ser Asn Leu Thr Asp Asn Gln Tyr Thr Trp Thr Asp Lys Trp Arg
1160 1165 1170

Val	Arg	Tyr	Thr	Asn	Trp	Ala	Ala	Asp	Glu	Pro	Lys	Leu	Lys	Ser
1175						1180					1185			
Ala	Cys	Val	Tyr	Leu	Asp	Leu	Asp	Gly	Tyr	Trp	Lys	Thr	Ala	His
1190						1195					1200			
Cys	Asn	Glu	Ser	Phe	Tyr	Phe	Leu	Cys	Lys	Arg	Ser	Asp	Glu	Ile
1205						1210					1215			
Pro	Ala	Thr	Glu	Pro	Pro	Gln	Leu	Pro	Gly	Arg	Cys	Pro	Glu	Ser
1220						1225					1230			
Asp	His	Thr	Ala	Trp	Ile	Pro	Phe	His	Gly	His	Cys	Tyr	Tyr	Ile
1235						1240					1245			
Glu	Ser	Ser	Tyr	Thr	Arg	Asn	Trp	Gly	Gln	Ala	Ser	Leu	Glu	Cys
1250						1255					1260			
Leu	Arg	Met	Gly	Ser	Ser	Leu	Val	Ser	Ile	Glu	Ser	Ala	Ala	Glu
1265						1270					1275			
Ser	Ser	Phe	Leu	Ser	Tyr	Arg	Val	Glu	Pro	Leu	Lys	Ser	Lys	Thr
1280						1285					1290			
Asn	Phe	Trp	Ile	Gly	Leu	Phe	Arg	Asn	Val	Glu	Gly	Thr	Trp	Leu
1295						1300					1305			
Trp	Ile	Asn	Asn	Ser	Pro	Val	Ser	Phe	Val	Asn	Trp	Asn	Thr	Gly
1310						1315					1320			
Asp	Pro	Ser	Gly	Glu	Arg	Asn	Asp	Cys	Val	Ala	Leu	His	Ala	Ser
1325						1330					1335			
Ser	Gly	Phe	Trp	Ser	Asn	Ile	His	Cys	Ser	Ser	Tyr	Lys	Gly	Tyr
1340						1345					1350			
Ile	Cys	Lys	Arg	Pro	Lys	Ile	Ile	Asp	Ala	Lys	Pro	Thr	His	Glu
1355						1360					1365			
Leu	Leu	Thr	Thr	Lys	Ala	Asp	Thr	Arg	Lys	Met	Asp	Pro	Ser	Lys
1370						1375					1380			
Pro	Ser	Ser	Asn	Val	Ala	Gly	Val	Val	Ile	Ile	Val	Ile	Leu	Leu
1385						1390					1395			

1. The first group of people who are interested in the results of the study are the researchers themselves. They want to know if the study was successful in achieving its objectives and if the results are consistent with their expectations. They also want to know if the study was conducted in a rigorous and unbiased manner.

35	40	45	
ggc ctg aag atg cag cgg aca gtg aac aca att tgg ttc ctc cac ctc			192
Gly Leu Lys Met Gln Arg Thr Val Asn Thr Ile Trp Phe Leu His Leu			
50	55	60	
acc ttg gcg gac ctc ctc tgc tgc ctc tcc ttg ccc ttc tcg ctg gct			240
Thr Leu Ala Asp Leu Leu Cys Cys Leu Ser Leu Pro Phe Ser Leu Ala			
65	70	75	80
cac ttg gct ctc cag gga cag tgg ccc tac ggc agg ttc cta tgc aag			288
His Leu Ala Leu Gln Gly Gln Trp Pro Tyr Gly Arg Phe Leu Cys Lys			
	85	90	95
ctc atc ccc tcc atc att gtc ctc aac atg ttt gcc agt gtc ttc ctg			336
Leu Ile Pro Ser Ile Ile Val Leu Asn Met Phe Ala Ser Val Phe Leu			
	100	105	110
ctt act gcc att agc ctg gat cgc tgt ctt gtg gta ttc aag cca atc			384
Leu Thr Ala Ile Ser Leu Asp Arg Cys Leu Val Val Phe Lys Pro Ile			
	115	120	125
tgg tgt cag aat cat cgc aat gta ggg atg gcc tgc tct atc tgt gga			432
Trp Cys Gln Asn His Arg Asn Val Gly Met Ala Cys Ser Ile Cys Gly			
	130	135	140
tgt atc tgg gtg gtg gct ttt gtg atg tgc att cct gtg ttc gtg tac			480
Cys Ile Trp Val Val Ala Phe Val Met Cys Ile Pro Val Phe Val Tyr			
145	150	155	160
cgg gaa atc ttc act aca gac aac cat aat aga tgt ggc tac aaa ttt			528
Arg Glu Ile Phe Thr Thr Asp Asn His Asn Arg Cys Gly Tyr Lys Phe			
	165	170	175
ggt ctc tcc agc tca tta gat tat cca gac ttt tat gga gat cca cta			576
Gly Leu Ser Ser Ser Leu Asp Tyr Pro Asp Phe Tyr Gly Asp Pro Leu			
	180	185	190
gaa aac agg tct ctt gaa aac att gtt cag ccg cct gga gaa atg aat			624
Glu Asn Arg Ser Leu Glu Asn Ile Val Gln Pro Pro Gly Glu Met Asn			
	195	200	205
gat agg tta gat cct tcc tct ttc caa aca aat gat cat cct tgg aca			672
Asp Arg Leu Asp Pro Ser Ser Phe Gln Thr Asn Asp His Pro Trp Thr			
	210	215	220
gtc ccc act gtc ttc caa cct caa aca ttt caa aga cct tct gca gat			720
Val Pro Thr Val Phe Gln Pro Gln Thr Phe Gln Arg Pro Ser Ala Asp			
225	230	235	240
tca ctc cct agg ggt tct gct agg tta aca agt caa aat ctg tat tct			768
Ser Leu Pro Arg Gly Ser Ala Arg Leu Thr Ser Gln Asn Leu Tyr Ser			
	245	250	255
aat gta ttt aaa cct gct gat gtg gtc tca cct aaa atc ccc agt ggg			816
Asn Val Phe Lys Pro Ala Asp Val Val Ser Pro Lys Ile Pro Ser Gly			
	260	265	270
ttt cct att gaa gat cac gaa acc agc cca ctg gat aac tct gat gct			864
Phe Pro Ile Glu Asp His Glu Thr Ser Pro Leu Asp Asn Ser Asp Ala			

275	280	285	
ttt ctc tct act cat tta aag ctg ttc cct agc gct tct agc aat tcc			912
Phe Leu Ser Thr His Leu Lys Leu Phe Pro Ser Ala Ser Ser Asn Ser			
290	295	300	
ttc tac gag tct gag cta cca caa ggt ttc cag gat tat tac aat tta			960
Phe Tyr Glu Ser Glu Leu Pro Gln Gly Phe Gln Asp Tyr Tyr Asn Leu			
305	310	315	320
ggc caa ttc aca gat gac gat caa gtg cca aca ccc ctc gtg gca ata			1008
Gly Gln Phe Thr Asp Asp Asp Gln Val Pro Thr Pro Leu Val Ala Ile			
	325	330	335
acg atc act agg cta gtg gtg ggt ttc ctg ctg ccc tct gtt atc atg			1056
Thr Ile Thr Arg Leu Val Val Gly Phe Leu Leu Pro Ser Val Ile Met			
	340	345	350
ata gcc tgt tac agc ttc att gtc ttc cga atg caa agg ggc cgc ttc			1104
Ile Ala Cys Tyr Ser Phe Ile Val Phe Arg Met Gln Arg Gly Arg Phe			
	355	360	365
gcc aag tct cag agc aaa acc ttt cga gtg gcc gtg gtg gtg gtg gct			1152
Ala Lys Ser Gln Ser Lys Thr Phe Arg Val Ala Val Val Val Val Ala			
	370	375	380
gtc ttt ctt gtc tgc tgg act cca tac cac att ttt gga gtc ctg tca			1200
Val Phe Leu Val Cys Trp Thr Pro Tyr His Ile Phe Gly Val Leu Ser			
	385	390	400
ttg ctt act gac cca gaa act ccc ttg ggg aaa act ctg atg tcc tgg			1248
Leu Leu Thr Asp Pro Glu Thr Pro Leu Gly Lys Thr Leu Met Ser Trp			
	405	410	415
gat cat gta tgc att gct cta gca tct gcc aat agt tgc ttt aat ccc			1296
Asp His Val Cys Ile Ala Leu Ala Ser Ala Asn Ser Cys Phe Asn Pro			
	420	425	430
ttc ctt tat gcc ctc ttg ggg aaa gat ttt agg aag aaa gca agg cag			1344
Phe Leu Tyr Ala Leu Leu Gly Lys Asp Phe Arg Lys Lys Ala Arg Gln			
	435	440	445
tcc att cag gga att ctg gag gca gcc ttc agt gag gag ctc aca cgt			1392
Ser Ile Gln Gly Ile Leu Glu Ala Ala Phe Ser Glu Glu Leu Thr Arg			
	450	455	460
tcc acc cac tgt ccc tca aac aat gtc att tca gaa aga aat agt aca			1440
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act gtg tga			1449
Thr Val			

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Met	Ala	Ser	Phe	Ser	Ala	Glu	Thr	Asn	Ser	Thr	Asp	Leu	Leu	Ser	Gln
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Pro Trp Asn Glu Pro Pro Val Ile Leu Ser Met Val Ile Leu Ser Leu
20 25 30

Thr Phe Leu Leu Gly Leu Pro Gly Asn Gly Leu Val Leu Trp Val Ala
35 40 45

Gly Leu Lys Met Gln Arg Thr Val Asn Thr Ile Trp Phe Leu His Leu
50 55 60

Thr Leu Ala Asp Leu Leu Cys Cys Leu Ser Leu Pro Phe Ser Leu Ala
65 70 75 80

His Leu Ala Leu Gln Gly Gln Trp Pro Tyr Gly Arg Phe Leu Cys Lys
85 90 95

Leu Ile Pro Ser Ile Ile Val Leu Asn Met Phe Ala Ser Val Phe Leu
100 105 110

Leu Thr Ala Ile Ser Leu Asp Arg Cys Leu Val Val Phe Lys Pro Ile
115 120 125

Trp Cys Gln Asn His Arg Asn Val Gly Met Ala Cys Ser Ile Cys Gly
130 135 140

Cys Ile Trp Val Val Ala Phe Val Met Cys Ile Pro Val Phe Val Tyr
145 150 155 160

Arg Glu Ile Phe Thr Thr Asp Asn His Asn Arg Cys Gly Tyr Lys Phe
165 170 175

Gly Leu Ser Ser Ser Leu Asp Tyr Pro Asp Phe Tyr Gly Asp Pro Leu
180 185 190

Glu Asn Arg Ser Leu Glu Asn Ile Val Gln Pro Pro Gly Glu Met Asn
195 200 205

Asp Arg Leu Asp Pro Ser Ser Phe Gln Thr Asn Asp His Pro Trp Thr
210 215 220

Val Pro Thr Val Phe Gln Pro Gln Thr Phe Gln Arg Pro Ser Ala Asp
225 230 235 240

Ser Leu Pro Arg Gly Ser Ala Arg Leu Thr Ser Gln Asn Leu Tyr Ser
245 250 255

Asn Val Phe Lys Pro Ala Asp Val Val Ser Pro Lys Ile Pro Ser Gly
260 265 270

Phe Pro Ile Glu Asp His Glu Thr Ser Pro Leu Asp Asn Ser Asp Ala
275 280 285

Phe Leu Ser Thr His Leu Lys Leu Phe Pro Ser Ala Ser Ser Asn Ser
290 295 300

Phe Tyr Glu Ser Glu Leu Pro Gln Gly Phe Gln Asp Tyr Tyr Asn Leu
305 310 315 320

Gly Gln Phe Thr Asp Asp Asp Gln Val Pro Thr Pro Leu Val Ala Ile
325 330 335

Thr Ile Thr Arg Leu Val Val Gly Phe Leu Leu Pro Ser Val Ile Met
340 345 350

Ile Ala Cys Tyr Ser Phe Ile Val Phe Arg Met Gln Arg Gly Arg Phe
355 360 365

Ala Lys Ser Gln Ser Lys Thr Phe Arg Val Ala Val Val Val Val Ala
370 375 380

Val Phe Leu Val Cys Trp Thr Pro Tyr His Ile Phe Gly Val Leu Ser
385 390 395 400

Leu Leu Thr Asp Pro Glu Thr Pro Leu Gly Lys Thr Leu Met Ser Trp
405 410 415

Asp His Val Cys Ile Ala Leu Ala Ser Ala Asn Ser Cys Phe Asn Pro
420 425 430

Phe Leu Tyr Ala Leu Leu Gly Lys Asp Phe Arg Lys Lys Ala Arg Gln
435 440 445

Ser Ile Gln Gly Ile Leu Glu Ala Ala Phe Ser Glu Glu Leu Thr Arg
450 455 460

Ser Thr His Cys Pro Ser Asn Asn Val Ile Ser Glu Arg Asn Ser Thr
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Thr Val

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 Met Ala Gln Ser Leu Ala Leu Ser Leu Leu Ile Leu Val Leu Ala Phe
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 Gly Ile Pro Arg Thr Gln Gly Ser Asp Gly Gly Ala Gln Asp Cys Cys
 20 25 30
 ctc aag tac agc caa agg aag att ccc gcc aag gtt gtc cgc agc tac 202
 Leu Lys Tyr Ser Gln Arg Lys Ile Pro Ala Lys Val Val Arg Ser Tyr
 35 40 45
 cgg aag cag gaa cca agc tta ggc tgc tcc atc cca gct atc ctg ttc 250
 Arg Lys Gln Glu Pro Ser Leu Gly Cys Ser Ile Pro Ala Ile Leu Phe
 50 55 60
 ttg ccc cgc aag cgc tct cag gca gag cta tgt gca gac cca aag gag 298
 Leu Pro Arg Lys Arg Ser Gln Ala Glu Leu Cys Ala Asp Pro Lys Glu
 65 70 75 80
 ctc tgg gtg cag cag ctg atg cag cat ctg gac aag aca cca tcc cca 346
 Leu Trp Val Gln Gln Leu Met Gln His Leu Asp Lys Thr Pro Ser Pro
 85 90 95
 cag aaa cca gcc cag ggc tgc agg aag gac agg ggg gcc tcc aag act 394
 Gln Lys Pro Ala Gln Gly Cys Arg Lys Asp Arg Gly Ala Ser Lys Thr
 100 105 110
 ggc aag aaa gga aag ggc tcc aaa ggc tgc aag agg act gag cgg tca 442
 Gly Lys Lys Gly Lys Gly Ser Lys Gly Cys Lys Arg Thr Glu Arg Ser
 115 120 125
 cag acc cct aaa ggg cca tag ccagtgagc agcctggagc cctggagacc 493
 Gln Thr Pro Lys Gly Pro
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20 25 30

Leu Lys Tyr Ser Gln Arg Lys Ile Pro Ala Lys Val Val Arg Ser Tyr
35 40 45

Arg Lys Gln Glu Pro Ser Leu Gly Cys Ser Ile Pro Ala Ile Leu Phe
50 55 60

Leu Pro Arg Lys Arg Ser Gln Ala Glu Leu Cys Ala Asp Pro Lys Glu
65 70 75 80

Leu Trp Val Gln Gln Leu Met Gln His Leu Asp Lys Thr Pro Ser Pro
85 90 95

Gln Lys Pro Ala Gln Gly Cys Arg Lys Asp Arg Gly Ala Ser Lys Thr
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Gly Lys Lys Gly Lys Gly Ser Lys Gly Cys Lys Arg Thr Glu Arg Ser
115 120 125

Gln Thr Pro Lys Gly Pro
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Ser Thr Lys Gly Glu Gly Arg Gly Leu Gly Leu Ser Thr Leu Lys Glu
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Val Gly Asn Ile Ile Phe Val Thr Ser His Ser Glu Leu Thr Tyr Leu
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Leu Lys Arg Gly Ser Asn Ser Val Tyr Val Gln Tyr Asp Asp Ile Met
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Phe Phe Glu Ser Ser Thr Lys Ser His Arg Leu Ile Ala His Leu Asp
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Asn Arg Gln Ile Glu Phe Tyr Gly Asn Leu Lys Glu Leu Ser Gln Leu
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Asp Asp Arg Phe Phe Arg Cys His Asn Ser Phe Val Val Asn Arg His
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Leu Val Arg Cys Leu Pro Ala Arg Met Lys Ile Ser Gln Leu Tyr Gly	
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Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe Glu	
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Thr	Phe	Glu	Gln	Gly	Lys	Ser	Thr	Lys	Leu	Met	Met	Leu	Thr	Asp	Lys		
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Val	Asp	Arg	Ser	Ile	Glu	Ala	Leu	Ala	Ser	Leu	Pro	Glu	Ser	Leu	Arg		
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Leu	His	Pro	Ala	Tyr	Gln	Glu	Ala	Ala	Gly	Ile	Val	Leu	Leu	Glu	Ala		
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Ile	Thr	Ala	Gly	Leu	Pro	Val	Leu	Thr	Thr	Ala	Val	Cys	Gly	Tyr	Ala		
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Pro	Leu	Arg	Met	Ala	Trp	Ala	Glu	Asn	Ala	Arg	His	Tyr	Ala	Asp	Thr		
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Gly Leu Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly	
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Lys Asp Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg	
730	745
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Glu Leu Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser	
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Tyr Phe Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys	
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His Ala Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly	
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Ala Asp Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu	
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860	870
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Asn His Arg Asp Cys Tyr Ile Cys His Phe Leu Leu His Leu Pro Phe	
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Thr Gly Arg Glu Asp Glu Leu Lys Ile Ser Val Ile Asp Leu His Arg	
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Ala Gln Ile Arg Ala Lys Val Pro Arg Arg Trp Arg Asp Lys Asp Leu	
910	920
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Ile Gly Leu Tyr Phe Ser Ser Met Asn Ile Gly Leu Thr Gln Arg Asp	
925	935
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Met Thr Ile Tyr Phe Ile Asn Trp Val Ala Asp	
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Ser Lys Ile Gly Met Asp Asn Ala Trp Leu Gly Arg Leu Phe Ile	
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Lys His Tyr Leu Asn Asp Ile Lys Lys Asp Asp Ile Ile Ile Ile	
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Asn Ile Asn Cys His Lys Val Leu Leu Leu Arg Asn Thr Val Gly	
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Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu Arg	
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Lys Thr Ser	Ser Thr Thr Ser	Lys Tyr Leu Ile Glu	Lys Gln Ile	
1175		1180	1185	
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Ser Tyr Glu	Glu Asn Ile Arg	Arg Thr Leu Asn Ala	Asn Ile Ile	
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Val Asp Ile	Thr Lys Glu Asn	Gln Ser Gly Trp Thr	Leu Arg Ile	
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Leu Glu Ala	Leu Phe Phe Asn	Lys Lys Leu Ile Thr	Asn Asn Ile	
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Ile Gly His	Asp Asp Trp Asp	Lys Leu Glu Tyr Phe	Ile Asn Ser	
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Ser Val Lys	Pro Met Asp Tyr	Asp Ser Leu Tyr Lys	Phe Ser Pro	
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Asp Lys Met	Met Ser Thr Ile	Val Ser Asp Phe Ile	Asp Lys	
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Gln Ser Glu	Met Phe Phe Phe	Cys Arg Asn Asp	Lys Met Asp Lys	
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Gly Trp Leu	Glu Gly Ile Lys	Tyr Ser Cys Ser	Phe Ser Asn Ile	
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Arg Leu Gly	Phe Leu Arg Arg	Ala Lys His Ile	His Ala Leu Ser	
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Lys Trp	Leu Gln Glu Tyr	Gln Pro Asp Ile Val	Ile Cys Ile Asp	
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Val Ile	Ser Cys Leu Phe Ala	Ala Lys Ala Arg Lys	Lys Ser Gly	
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Ile Asp	Met Pro Val Phe Ser	Trp Pro His Phe Ser	Leu Asp His	
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Lys Lys	His Ala Glu Tyr Ile	Thr Cys Ala Asp Tyr	His Leu Ala	
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Glu Ser	Thr Ile Asn Val Ile	Phe Asn Pro Val Glu	Thr Lys Asp	
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Ser Val	Ile Pro Ala Pro Glu	Glu Gly Glu Thr Ala	Thr Phe Ile	
1470		1475	1480	
tat gtt	ggg cgt atg aaa ttt	gaa ggc cag aaa aga	gtt aaa gac	4995
Tyr Val	Gly Arg Met Lys Phe	Glu Gly Gln Lys Arg	Val Lys Asp	
1485		1490	1495	
ctg ctt	gat ggc tta tca caa	gcg aaa ggt aac tgg	aaa ctc cat	5040
Leu Leu	Asp Gly Leu Ser Gln	Ala Lys Gly Asn Trp	Lys Leu His	
1500		1505	1510	
gta ttg	ggg gat ggc tcc gat	ttc gaa aaa tgc cag	gct tat ggt	5085
Val Leu	Gly Asp Gly Ser Asp	Phe Glu Lys Cys Gln	Ala Tyr Gly	
1515		1520	1525	
aga gaa	tta aat att gat gat	cga att gtc tgg tat	ggg tgg caa	5130
Arg Glu	Leu Asn Ile Asp Asp	Arg Ile Val Trp Tyr	Gly Trp Gln	
1530		1535	1540	
caa tat	ccc tgg gaa ttg gtc	cag caa gat att gaa	aaa gtg agt	5175
Gln Tyr	Pro Trp Glu Leu Val	Gln Gln Asp Ile Glu	Lys Val Ser	
1545		1550	1555	
gcg tta	ttg ctc acg tca tct	ttt gaa ggt ttc cca	atg acc cta	5220
Ala Leu	Leu Leu Thr Ser Ser	Phe Glu Gly Phe Pro	Met Thr Leu	
1560		1565	1570	
ctt gaa	gcc ttg tcg tgg ggg	att cct tgt atc agt	gcc gat tgt	5265
Leu Glu	Ala Leu Ser Trp Gly	Ile Pro Cys Ile Ser	Ala Asp Cys	
1575		1580	1585	
gtc tcc	ggg cct gct gac att	att caa cct gat gtc	aat ggc cat	5310
Val Ser	Gly Pro Ala Asp Ile	Ile Gln Pro Asp Val	Asn Gly His	
1590		1595	1600	
ctg tat	caa ccg gga gat att	gct ggt ttt gta act	ctt cta aat	5355

Leu Tyr	Gln Pro Gly Asp	Ile	Ala Gly Phe Val	Thr	Leu Leu Asn	
1605		1610		1615		
aaa tat	ata gca ggt gaa	att	cat atc gaa cat	gaa	aaa att cct	5400
Lys Tyr	Ile Ala Gly Glu	Ile	His Ile Glu His	Glu	Lys Ile Pro	
1620		1625		1630		
gcg tcg	atc gat gaa ttt	tac	caa tcg aag tat	tac	gat aga tta	5445
Ala Ser	Ile Asp Glu Phe	Tyr	Gln Ser Lys Tyr	Tyr	Asp Arg Leu	
1635		1640		1645		
cat aag	gta att att tct	gct	att tcc cgg agg	aaa	ta atg cag cag	5492
His Lys	Val Ile Ile Ser	Ala	Ile Ser Arg Arg	Lys	Met Gln Gln	
1650		1655		1660		
gtg ttt	ttc cag gaa act	gag	ttt ctt aat tca	gtt	att gat tat	5537
Val Phe	Phe Gln Glu Thr	Glu	Phe Leu Asn Ser	Val	Ile Asp Tyr	
1665		1670		1675		
gat cat	aaa gta gaa aca	gaa	aat ctt tgt ctg	gac	atc gct tat	5582
Asp His	Lys Val Glu Thr	Glu	Asn Leu Cys Leu	Asp	Ile Ala Tyr	
1680		1685		1690		
gga act	gac aaa aac ttt	cta	ttt ggt tgc gga	att	tcg att gct	5627
Gly Thr	Asp Lys Asn Phe	Leu	Phe Gly Cys Gly	Ile	Ser Ile Ala	
1695		1700		1705		
tca ata	tta aaa tat aat	gaa	gga agt cga ttg	tgt	ttc cat att	5672
Ser Ile	Leu Lys Tyr Asn	Glu	Gly Ser Arg Leu	Cys	Phe His Ile	
1710		1715		1720		
ttt act	gat tat ttt ggt	gat	gat gat cgt aag	tat	ttt gat gcc	5717
Phe Thr	Asp Tyr Phe Gly	Asp	Asp Asp Arg Lys	Tyr	Phe Asp Ala	
1725		1730		1735		
ctg gcg	ttg cag tat aaa	acc	aga att aaa ata	tat	ctg att aat	5762
Leu Ala	Leu Gln Tyr Lys	Thr	Arg Ile Lys Ile	Tyr	Leu Ile Asn	
1740		1745		1750		
ggt gat	cga ctg cgc tca	ttg	cct agc act aag	aat	tgg act cat	5807
Gly Asp	Arg Leu Arg Ser	Leu	Pro Ser Thr Lys	Asn	Trp Thr His	
1755		1760		1765		
gca ata	tat ttt cgt ttt	gtt	att gca gat tac	ttt	att aat aag	5852
Ala Ile	Tyr Phe Arg Phe	Val	Ile Ala Asp Tyr	Phe	Ile Asn Lys	
1770		1775		1780		
gcg cct	aaa gtc ctt tat	ctg	gat gca gat atc	att	tgt cag ggg	5897
Ala Pro	Lys Val Leu Tyr	Leu	Asp Ala Asp Ile	Ile	Cys Gln Gly	
1785		1790		1795		
act att	gag cca cta att	aat	ttc tca ttt cct	gac	gat aaa gtc	5942
Thr Ile	Glu Pro Leu Ile	Asn	Phe Ser Phe Pro	Asp	Asp Lys Val	
1800		1805		1810		
gca atg	gtt gtt aca gaa	ggg	caa gct gac tgg	tgg	gaa aaa cgc	5987
Ala Met	Val Val Thr Glu	Gly	Gln Ala Asp Trp	Trp	Glu Lys Arg	
1815		1820		1825		
gcc cat	tcg tta ggt gtt	gcg	gga att gct aaa	ggt	tac ttt aac	6032

Ala	His	Ser	Leu	Gly	Val	Ala	Gly	Ile	Ala	Lys	Gly	Tyr	Phe	Asn		
1830						1835					1840					
tcc	ggt	ttt	tta	ttg	att	aat	act	gcc	caa	tgg	gcg	gct	cag	cag	6077	
Ser	Gly	Phe	Leu	Leu	Ile	Asn	Thr	Ala	Gln	Trp	Ala	Ala	Gln	Gln		
1845						1850					1855					
ggt	tct	gca	cga	gct	att	gca	atg	cta	aat	gag	cca	gaa	ata	atc	6122	
Val	Ser	Ala	Arg	Ala	Ile	Ala	Met	Leu	Asn	Glu	Pro	Glu	Ile	Ile		
1860						1865					1870					
aaa	aaa	ata	aca	cat	cct	gat	cag	gat	gtg	tta	aat	atg	ttg	ctg	6167	
Lys	Lys	Ile	Thr	His	Pro	Asp	Gln	Asp	Val	Leu	Asn	Met	Leu	Leu		
1875						1880					1885					
gcg	gat	aaa	ctt	att	ttc	gct	gat	att	aaa	tat	aac	acc	cag	ttc	6212	
Ala	Asp	Lys	Leu	Ile	Phe	Ala	Asp	Ile	Lys	Tyr	Asn	Thr	Gln	Phe		
1890						1895					1900					
agc	tta	aat	tat	caa	ctc	aaa	gaa	agc	ttt	ata	aac	cca	gta	acc	6257	
Ser	Leu	Asn	Tyr	Gln	Leu	Lys	Glu	Ser	Phe	Ile	Asn	Pro	Val	Thr		
1905						1910					1915					
aac	gat	act	att	ttt	atc	cat	tat	atc	ggg	cca	acc	aag	ccc	tgg	6302	
Asn	Asp	Thr	Ile	Phe	Ile	His	Tyr	Ile	Gly	Pro	Thr	Lys	Pro	Trp		
1920						1925					1930					
cat	gat	tgg	gcc	tgg	gat	tat	cct	gta	tca	caa	gcc	ttt	atg	gag	6347	
His	Asp	Trp	Ala	Trp	Asp	Tyr	Pro	Val	Ser	Gln	Ala	Phe	Met	Glu		
1935						1940					1945					
gca	aaa	aat	gct	tgc	cca	tgg	aag	aat	acg	gcg	ttg	ctg	aaa	ccg	6392	
Ala	Lys	Asn	Ala	Ser	Pro	Trp	Lys	Asn	Thr	Ala	Leu	Leu	Lys	Pro		
1950						1955					1960					
aac	aat	agc	aat	caa	tta	aga	tat	agc	gca	aaa	cat	atg	ctt	aaa	6437	
Asn	Asn	Ser	Asn	Gln	Leu	Arg	Tyr	Ser	Ala	Lys	His	Met	Leu	Lys		
1965						1970					1975					
aag	cat	aga	tat	cta	aaa	gga	ttt	agc	aac	tat	ctt	ttt	tat	ttt	6482	
Lys	His	Arg	Tyr	Leu	Lys	Gly	Phe	Ser	Asn	Tyr	Leu	Phe	Tyr	Phe		
1980						1985					1990					
att	gaa	aag	ata	aag	cat	taa	aactgggaaa	ctataaagta	atgatataag						6533	
Ile	Glu	Lys	Ile	Lys	His											
1995																
ggtagcatt	gtg	gac	tca	ttt	cct	gcc	ata	gag	ata	gat	aaa	gtt	aaa		6581	
	Val	Asp	Ser	Phe	Pro	Ala	Ile	Glu	Ile	Asp	Lys	Val	Lys			
	2000					2005					2010					
gcc	tgg	gat	ttt	cgg	cta	gct	aat	ata	aat	act	tct	gaa	tgt	tta	6626	
Ala	Trp	Asp	Phe	Arg	Leu	Ala	Asn	Ile	Asn	Thr	Ser	Glu	Cys	Leu		
	2015					2020						2025				
aat	gtt	gcc	tat	ggt	gtc	gat	gct	aat	tat	ctt	gat	ggt	gta	ggt	6671	
Asn	Val	Ala	Tyr	Gly	Val	Asp	Ala	Asn	Tyr	Leu	Asp	Gly	Val	Gly		
	2030					2035						2040				
gtt	tcc	atc	aca	tca	att	gtc	cta	aat	aat	cga	cat	att	aat	ctt	6716	

Val Ser Ile Thr Ser Ile Val Leu Asn Asn Arg His Ile Asn Leu	
2045 2050 2055	
gat ttt tat att att gct gat gtt tat aat gat ggt ttt ttt caa	6761
Asp Phe Tyr Ile Ile Ala Asp Val Tyr Asn Asp Gly Phe Phe Gln	
2060 2065 2070	
aaa att gca aag ctt gca gag caa aac caa tta aga atc acg tta	6806
Lys Ile Ala Lys Leu Ala Glu Gln Asn Gln Leu Arg Ile Thr Leu	
2075 2080 2085	
tat aga att aac act gat aag ctc cag tgc ttg cct tgt aca cag	6851
Tyr Arg Ile Asn Thr Asp Lys Leu Gln Cys Leu Pro Cys Thr Gln	
2090 2095 2100	
gtc tgg tca aga gca atg tac ttc cgt tta ttt gca ttt caa tta	6896
Val Trp Ser Arg Ala Met Tyr Phe Arg Leu Phe Ala Phe Gln Leu	
2105 2110 2115	
ttg ggt tta acg ctt gat cgt ttg ctt tat ctt gat gca gat gtt	6941
Leu Gly Leu Thr Leu Asp Arg Leu Leu Tyr Leu Asp Ala Asp Val	
2120 2125 2130	
gtt tgt aaa ggc gat att agc caa cta tta cat ctg ggt tta aat	6986
Val Cys Lys Gly Asp Ile Ser Gln Leu Leu His Leu Gly Leu Asn	
2135 2140 2145	
gga gcg gtt gct gct gtt gtt aaa gat gtt gag cca atg caa gaa	7031
Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro Met Gln Glu	
2150 2155 2160	
aag gcg gta tcc agg ttg tct gat cct gaa tta ctt ggg cag tac	7076
Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly Gln Tyr	
2165 2170 2175	
ttt aat tcc ggt gtc gtt tat tta gac tta aaa aaa tgg gct gac	7121
Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala Asp	
2180 2185 2190	
gca aaa cta aca gaa aaa gcg ttg tct att ctt atg agt aaa gat	7166
Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp	
2195 2200 2205	
aat gtt tat aaa tac cct gat cag gat gtt atg aat gtc tta ctg	7211
Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu	
2210 2215 2220	
aaa ggg atg aca tta ttt ttg cct cgt gag tac aat aca att tat	7256
Lys Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr	
2225 2230 2235	
aca att aaa agt gaa tta aaa gac aaa aca cat caa aac tat aaa	7301
Thr Ile Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys	
2240 2245 2250	
aag ctg att aca gaa agt act ctt ctt att cat tat aca ggt gca	7346
Lys Leu Ile Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala	
2255 2260 2265	
act aaa ccg tgg cac aaa tgg gca att tat cca tcg gta aaa tac	7391

Thr Lys Pro Trp His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr
 2270 2275 2280
 tat aaa ata gct tta gaa aat tcc ccc tgg aaa gat gac tct cca 7436
 Tyr Lys Ile Ala Leu Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro
 2285 2290 2295
 cga gat gcg aaa tca att att gaa ttt aaa aaa gat ata aac atc 7481
 Arg Asp Ala Lys Ser Ile Ile Glu Phe Lys Lys Asp Ile Asn Ile
 2300 2305 2310
 ttt tag tgcaacatca tt 7499
 Phe

<210> 106 <211> 344 <212> PRT <213> Escherichia coli <400> 106

Met Arg Tyr His Gly Asp Met Leu Leu Thr Thr Pro Val Ile Ser Thr
 1 5 10 15
 Leu Lys Gln Asn Tyr Pro Asp Ala Lys Ile Asp Met Leu Leu Tyr Gln
 20 25 30
 Asp Thr Ile Pro Ile Leu Ser Glu Asn Pro Glu Ile Asn Ala Leu Tyr
 35 40 45
 Gly Ile Ser Asn Lys Gly Ala Gly Thr Phe Asp Lys Ile Lys Asn Val
 50 55 60
 Leu Ser Leu Ile Lys Thr Leu Arg Ala Asn Asn Tyr Asp Leu Val Ile
 65 70 75 80
 Asn Leu Thr Asp Gln Trp Met Val Ala Leu Leu Val Arg Cys Leu Pro
 85 90 95
 Ala Arg Met Lys Ile Ser Gln Leu Tyr Gly His Arg Gln His Gly Ile
 100 105 110
 Trp Lys Lys Ser Phe Thr His Leu Ala Pro Ile His Gly Thr His Ile
 115 120 125
 Val Glu Arg Asn Leu Ser Val Leu Glu Pro Leu Gly Ile Thr Asp Phe
 130 135 140
 Tyr Thr Asp Thr Thr Met Ser Tyr Ala Glu Asp Cys Trp Lys Lys Met
 145 150 155 160
 Arg Arg Glu Leu Asp Ala Leu Gly Val Lys Asp His Tyr Val Val Ile
 165 170 175

Gln Pro Thr Ala Arg Gln Ile Phe Lys Cys Trp Asp Asn Asp Lys Phe
180 185 190

Ser Lys Val Ile Asp Ala Leu Gln Gln Arg Gly Tyr Gln Val Val Leu
195 200 205

Thr Cys Gly Pro Ser Ala Asp Asp Leu Ala Cys Val Asp Glu Ile Ala
210 215 220

Arg Gly Cys Glu Thr Lys Pro Ile Thr Gly Leu Ala Gly Lys Thr Arg
225 230 235 240

Phe Pro Glu Leu Gly Ala Leu Ile Asp His Ala Val Leu Phe Ile Gly
245 250 255

Val Asp Ser Ala Pro Gly His Ile Ala Ala Ala Val Lys Thr Pro Val
260 265 270

Ile Ser Leu Phe Gly Ala Thr Asp His Val Phe Trp Arg Pro Trp Thr
275 280 285

Glu Asn Ile Ile Gln Phe Trp Ala Gly Asn Tyr Gln Lys Met Pro Thr
290 295 300

Arg His Glu Leu Asp Arg Asn Lys Lys Tyr Leu Ser Val Ile Pro Ala
305 310 315 320

Glu Asp Val Ile Ala Ala Thr Glu Lys Leu Leu Pro Glu Asp Ala Pro
325 330 335

Ser Ala Asp Arg Asn Ala Gln Leu
340

<210> 107 <211> 371 <212> PRT <213> Escherichia coli <400> 107

Ile Val Ala Phe Cys Leu Tyr Lys Tyr Phe Pro Phe Gly Gly Leu Gln
1 5 10 15

Arg Asp Phe Met Arg Ile Ala Ser Thr Val Ala Ala Arg Gly His His
20 25 30

Val Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe
35 40 45

Glu Leu Ile Gln Val Pro Val Lys Ser His Thr Asn His Gly Arg Asn
50 55 60

Ala Glu Tyr Tyr Ala Trp Val Gln Asn His Leu Lys Glu His Pro Ala
65 70 75 80

Asp Arg Val Val Gly Phe Asn Lys Met Pro Gly Leu Asp Val Tyr Phe
85 90 95

Ala Ala Asp Val Cys Tyr Ala Glu Lys Val Ala Gln Glu Lys Gly Phe
100 105 110

Leu Tyr Arg Leu Thr Ser Arg Tyr Arg His Tyr Ala Ala Phe Glu Arg
115 120 125

Ala Thr Phe Glu Gln Gly Lys Ser Thr Lys Leu Met Met Leu Thr Asp
130 135 140

Lys Gln Ile Ala Asp Phe Gln Lys His Tyr Gln Thr Glu Pro Glu Arg
145 150 155 160

Phe Gln Ile Leu Pro Pro Gly Ile Tyr Pro Asp Arg Lys Tyr Ser Glu
165 170 175

Gln Ile Pro Asn Ser Arg Glu Ile Tyr Arg Gln Lys Asn Gly Ile Lys
180 185 190

Glu Gln Gln Asn Leu Leu Leu Gln Val Gly Ser Asp Phe Gly Arg Lys
195 200 205

Gly Val Asp Arg Ser Ile Glu Ala Leu Ala Ser Leu Pro Glu Ser Leu
210 215 220

Arg His Asn Thr Leu Leu Phe Val Val Gly Gln Asp Lys Pro Arg Lys
225 230 235 240

Phe Glu Ala Leu Ala Glu Lys Leu Gly Val Arg Ser Asn Val His Phe
245 250 255

Phe Ser Gly Arg Asn Asp Val Ser Glu Leu Met Ala Ala Ala Asp Leu
260 265 270

Leu Leu His Pro Ala Tyr Gln Glu Ala Ala Gly Ile Val Leu Leu Glu
275 280 285

Ala Ile Thr Ala Gly Leu Pro Val Leu Thr Thr Ala Val Cys Gly Tyr
290 295 300

Ala His Tyr Ile Ala Asp Ala Asn Cys Gly Thr Val Ile Ala Glu Pro
305 310 315 320

Phe Ser Gln Glu Gln Leu Asn Glu Val Leu Arg Lys Ala Leu Thr Gln
325 330 335

Ser Pro Leu Arg Met Ala Trp Ala Glu Asn Ala Arg His Tyr Ala Asp
340 345 350

Thr Gln Asp Leu Tyr Ser Leu Pro Glu Lys Ala Ala Asp Ile Ile Thr
355 360 365

Gly Gly Leu
370

<210> 108 <211> 265 <212> PRT <213> Escherichia coli <400> 108

Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly Lys Asp
1 5 10 15

Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg Glu Leu
20 25 30

Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser Tyr Phe
35 40 45

Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys Asn Leu
50 55 60

Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp His Ala
65 70 75 80

Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly Ile Gly
85 90 95

Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe Ile Ile
100 105 110

Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys Ala Asp
115 120 125

Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu Ile Ala
130 135 140

Arg	Val	Ala	Thr	Met	Val	Arg	Lys	Met	His	Thr	Ala	Gly	Ile	Asn	His
145					150					155					160

Arg Asp Cys Tyr Ile Cys His Phe Leu Leu His Leu Pro Phe Thr Gly
165 170 175

Arg Glu Asp Glu Leu Lys Ile Ser Val Ile Asp Leu His Arg Ala Gln
180 185 190

Ile Arg Ala Lys Val Pro Arg Arg Trp Arg Asp Lys Asp Leu Ile Gly
195 200 205

Leu Tyr Phe Ser Ser Met Asn Ile Gly Leu Thr Gln Arg Asp Ile Trp
210 215 220

Arg Phe Met Lys Val Tyr Phe Gly Met Pro Leu Arg Lys Ile Leu Ser
225 230 235 240

Leu Glu Gln Asn Leu Leu Asn Met Ala Ser Val Lys Ala Glu Arg Ile
245 250 255

Lys Glu Arg Thr Gln Arg Lys Gly Leu
260 265

<210> 109 <211> 311 <212> PRT <213> Escherichia coli <400> 109

Met Thr Ile Tyr Phe Ile Asn Trp Val Ala Asp Tyr Glu Leu Lys Met
1 5 10 15

Ile Gln Tyr Leu Lys Lys Lys Tyr Lys Ile Lys Asn Ile Thr Thr Pro
20 25 30

Lys Lys Tyr Asn Trp Ile Asn Lys Lys Ile Ser Lys Ile Gly Met Asp
35 40 45

Asn Ala Trp Leu Gly Arg Leu Phe Ile Lys His Tyr Leu Asn Asp Ile
50 55 60

Lys Lys Asp Asp Ile Ile Ile Ile Asn Asp Ser Val Val Asn Lys Gly
65 70 75 80

Ile Asn Lys Gln Ile Leu Lys Asn Ile Asn Cys His Lys Val Leu Leu
85 90 95

Leu Arg Asn Thr Val Gly Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr
 100 105 110

Phe Asp Ile Ile Tyr Asp Phe Glu His Arg Phe Ile Gly Asn Glu Lys
 115 120 125

Ile Lys Ala Ile Glu Gln Phe Phe Pro Ile Gly Met Asp Glu Ile Arg
 130 135 140

Asn Tyr Ser Leu Ser Asp Lys Asn Asn Ser Gln Pro Ile Cys Phe Phe
 145 150 155 160

Leu Gly Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu
 165 170 175

Arg Leu Thr Thr Leu Gly Cys Lys Leu Asp Phe Asn Val Val Lys Asp
 180 185 190

Lys Thr Ser Ser Thr Thr Ser Lys Tyr Leu Ile Glu Lys Gln Ile Ser
 195 200 205

Tyr Glu Glu Asn Ile Arg Arg Thr Leu Asn Ala Asn Ile Ile Val Asp
 210 215 220

Ile Thr Lys Glu Asn Gln Ser Gly Trp Thr Leu Arg Ile Leu Glu Ala
 225 230 235 240

Leu Phe Phe Asn Lys Lys Leu Ile Thr Asn Asn Ile Asn Val Phe Gly
 245 250 255

Ser Glu Ile Tyr Ser Glu Ser Arg Phe Phe Ile Ile Gly His Asp Asp
 260 265 270

Trp Asp Lys Leu Glu Tyr Phe Ile Asn Ser Ser Val Lys Pro Met Asp
 275 280 285

Tyr Asp Ser Leu Tyr Lys Phe Ser Pro Asp Lys Met Met Ser Thr Ile
 290 295 300

Val Ser Asp Phe Ile Asp Lys
 305 310

<210> 110 <211> 369 <212> PRT <213> Escherichia coli <400> 110

Val Ser Phe Thr Gln Leu Met Arg Val Ser Met Lys Ile Ala Phe Ile
 1 5 10 15

1975 1703 040103

Gly Glu Ala Val Ser Gly Phe Gly Gly Met Glu Thr Val Ile Arg Asp
20 25 30

Val Ile Thr Thr Phe Arg Gln Gln His Ile Gln Ser Glu Met Phe Phe
35 40 45

Phe Cys Arg Asn Asp Lys Met Asp Lys Gly Trp Leu Glu Gly Ile Lys
50 55 60

Tyr Ser Cys Ser Phe Ser Asn Ile Arg Leu Gly Phe Leu Arg Arg Ala
65 70 75 80

Lys His Ile His Ala Leu Ser Lys Trp Leu Gln Glu Tyr Gln Pro Asp
85 90 95

Ile Val Ile Cys Ile Asp Val Ile Ser Cys Leu Phe Ala Ala Lys Ala
100 105 110

Arg Lys Lys Ser Gly Ile Asp Met Pro Val Phe Ser Trp Pro His Phe
115 120 125

Ser Leu Asp His Lys Lys His Ala Glu Tyr Ile Thr Cys Ala Asp Tyr
130 135 140

His Leu Ala Ile Ser Ser Gly Ile Lys Gln Gln Met Ile Asn Arg Gly
145 150 155 160

Val Ala Glu Ser Thr Ile Asn Val Ile Phe Asn Pro Val Glu Thr Lys
165 170 175

Asp Ser Val Ile Pro Ala Pro Glu Glu Gly Glu Thr Ala Thr Phe Ile
180 185 190

Tyr Val Gly Arg Met Lys Phe Glu Gly Gln Lys Arg Val Lys Asp Leu
195 200 205

Leu Asp Gly Leu Ser Gln Ala Lys Gly Asn Trp Lys Leu His Val Leu
210 215 220

Gly Asp Gly Ser Asp Phe Glu Lys Cys Gln Ala Tyr Gly Arg Glu Leu
225 230 235 240

Asn Ile Asp Asp Arg Ile Val Trp Tyr Gly Trp Gln Gln Tyr Pro Trp
245 250 255

Glu Leu Val Gln Gln Asp Ile Glu Lys Val Ser Ala Leu Leu Leu Thr
 260 265 270

Ser Ser Phe Glu Gly Phe Pro Met Thr Leu Leu Glu Ala Leu Ser Trp
 275 280 285

Gly Ile Pro Cys Ile Ser Ala Asp Cys Val Ser Gly Pro Ala Asp Ile
 290 295 300

Ile Gln Pro Asp Val Asn Gly His Leu Tyr Gln Pro Gly Asp Ile Ala
 305 310 315 320

Gly Phe Val Thr Leu Leu Asn Lys Tyr Ile Ala Gly Glu Ile His Ile
 325 330 335

Glu His Glu Lys Ile Pro Ala Ser Ile Asp Glu Phe Tyr Gln Ser Lys
 340 345 350

Tyr Tyr Asp Arg Leu His Lys Val Ile Ile Ser Ala Ile Ser Arg Arg
 355 360 365

Lys

<210> 111 <211> 339 <212> PRT <213> Escherichia coli <400> 111

Met Gln Gln Val Phe Phe Gln Glu Thr Glu Phe Leu Asn Ser Val Ile
 1 5 10 15

Asp Tyr Asp His Lys Val Glu Thr Glu Asn Leu Cys Leu Asp Ile Ala
 20 25 30

Tyr Gly Thr Asp Lys Asn Phe Leu Phe Gly Cys Gly Ile Ser Ile Ala
 35 40 45

Ser Ile Leu Lys Tyr Asn Glu Gly Ser Arg Leu Cys Phe His Ile Phe
 50 55 60

Thr Asp Tyr Phe Gly Asp Asp Asp Arg Lys Tyr Phe Asp Ala Leu Ala
 65 70 75 80

Leu Gln Tyr Lys Thr Arg Ile Lys Ile Tyr Leu Ile Asn Gly Asp Arg
 85 90 95

Leu Arg Ser Leu Pro Ser Thr Lys Asn Trp Thr His Ala Ile Tyr Phe
 100 105 110

Arg Phe Val Ile Ala Asp Tyr Phe Ile Asn Lys Ala Pro Lys Val Leu
 115 120 125

Tyr Leu Asp Ala Asp Ile Ile Cys Gln Gly Thr Ile Glu Pro Leu Ile
 130 135 140

Asn Phe Ser Phe Pro Asp Asp Lys Val Ala Met Val Val Thr Glu Gly
 145 150 155 160

Gln Ala Asp Trp Trp Glu Lys Arg Ala His Ser Leu Gly Val Ala Gly
 165 170 175

Ile Ala Lys Gly Tyr Phe Asn Ser Gly Phe Leu Leu Ile Asn Thr Ala
 180 185 190

Gln Trp Ala Ala Gln Gln Val Ser Ala Arg Ala Ile Ala Met Leu Asn
 195 200 205

Glu Pro Glu Ile Ile Lys Lys Ile Thr His Pro Asp Gln Asp Val Leu
 210 215 220

Asn Met Leu Leu Ala Asp Lys Leu Ile Phe Ala Asp Ile Lys Tyr Asn
 225 230 235 240

Thr Gln Phe Ser Leu Asn Tyr Gln Leu Lys Glu Ser Phe Ile Asn Pro
 245 250 255

Val Thr Asn Asp Thr Ile Phe Ile His Tyr Ile Gly Pro Thr Lys Pro
 260 265 270

Trp His Asp Trp Ala Trp Asp Tyr Pro Val Ser Gln Ala Phe Met Glu
 275 280 285

Ala Lys Asn Ala Ser Pro Trp Lys Asn Thr Ala Leu Leu Lys Pro Asn
 290 295 300

Asn Ser Asn Gln Leu Arg Tyr Ser Ala Lys His Met Leu Lys Lys His
 305 310 315 320

Arg Tyr Leu Lys Gly Phe Ser Asn Tyr Leu Phe Tyr Phe Ile Glu Lys
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Ile Lys His

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Ile Val Leu Asn Asn Arg His Ile Asn Leu Asp Phe Tyr Ile Ile Ala
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Asp Val Tyr Asn Asp Gly Phe Phe Gln Lys Ile Ala Lys Leu Ala Glu
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Gln Asn Gln Leu Arg Ile Thr Leu Tyr Arg Ile Asn Thr Asp Lys Leu
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Gln Cys Leu Pro Cys Thr Gln Val Trp Ser Arg Ala Met Tyr Phe Arg
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Leu Phe Ala Phe Gln Leu Leu Gly Leu Thr Leu Asp Arg Leu Leu Tyr
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Leu Gly Leu Asn Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro
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Met Gln Glu Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly
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Gln Tyr Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala
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Asp Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp
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Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu Lys
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Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr Thr Ile
225 230 235 240

Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys Lys Leu Ile
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Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala Thr Lys Pro Trp
260 265 270

His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr Tyr Lys Ile Ala Leu
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Pro Asp Val Gly Arg Arg Val Gly Ala Arg Arg Val Ala Tyr Pro Asp
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Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His
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ccc gcc ggt cgc cat ggc ggg cat tcg caa ggt gtg ctg gcg gtg gaa 192
Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu
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Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala
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cag ttg atc ggt gcc gcc gga acg ctg gtg gcc cgc cgg cgc gaa ttt 288
Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe
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Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro
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gag cgc atc gcc cgg ttg ctc gac gag ttc gcc cag gac gtg cgc acg 384
Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr

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Ile	Thr	Gly	Thr	Pro	Glu	Gln	Leu	Ser	Arg	Phe	Glu	Leu	Tyr	Cys	Arg	
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Gly	Asp	Val	Phe	Ser	Pro	Val	Phe	Glu	Pro	Val	Gln	Val	Glu	Val	Gly	
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Phe	His	Thr	Pro	Arg	Leu	Ser	Asp	Gly	Ile	Asp	Ile	Val	Ala	Gly	Trp	
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Ala	Ile	Leu	Ile	Arg	Lys	Val	Asp	Trp	Val	Asp	Glu	Ile	Thr	Arg	Val	
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His	Arg	Ala	Gly	Ala	Arg	Trp	Ile	Leu	Asp	Leu	Gly	Pro	Gly	Asp	Ile	
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Leu	Thr	Arg	Leu	Thr	Ala	Pro	Val	Ile	Arg	Gly	Leu	Gly	Ile	Gly	Ile	
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Val	Pro	Ala	Arg	Thr	Arg	Gly	Gly	Gln	Arg	Asn	Leu	Phe	Thr	Val	Gly	
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Ala	Thr	Pro	Glu	Val	Ala	Arg	Ala	Trp	Ser	Ser	Tyr	Ala	Pro	Thr	Val	
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Val	Arg	Leu	Pro	Asp	Gly	Arg	Val	Lys	Leu	Ser	Thr	Lys	Phe	Thr	Arg	
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Leu																

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Arg	Arg	Thr	Gly	Arg	His	Arg	His	Gln	Pro	Arg	Arg	Val	Gln	Thr	Arg															
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Asp	His	Arg	Ala	Asp	Pro	Leu	Gly	Asp	Ser	His	Arg	His	Arg	Gly	Ala															
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His	Gln	Ala	Gly	Asp	His	Ala	Arg	Arg	Gly	Pro	Gly	Ala	Pro	Ala	Gly															
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acc	att	cct	ggg	agg	atc	tca	cac	ctg	ctg	ctg	gct	acc	tac	tcg	gca	1488														
Thr	Ile	Pro	Gly	Arg	Ile	Ser	His	Leu	Leu	Leu	Ala	Thr	Tyr	Ser	Ala															
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Thr	Arg	Arg	Arg	Ser	Arg	Ser	Val	Ala	Trp	Pro	Arg	Pro	Pro	Ser	Pro	
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Thr	Cys	Arg	Arg	Arg	Arg	His	Asp	Leu	Pro	Ala	Val	Ala	Ala	Gly	Ala	
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Thr	Ser	Asn	Trp	Pro	Ser	Gly	Lys	Ala	Thr	Arg	Pro	Pro	Thr	Pro	Pro	
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Pro	Met	Arg	Cys	Ala	Ser	Phe	Arg	Ala	Arg	Val	Gly	Ser	Arg	Ile	Thr	
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Ser	Gly	Arg	Leu	Gly	Arg	Ala	Asp	Val	Ala	Gly	Pro	Leu	Ala	Val	Val	
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Leu	Asp	Ala	Pro	Asp	Val	Arg	Trp	Ala	Gly	Arg	Thr	Val	Thr	Asn	Pro	

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Val His Arg Ile Arg Asp Pro Ala Glu Trp Gln	Val His Asp Gly Pro		
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Glu Asn Pro Arg Ala Ala His Ser Ser Thr Gly Ala Arg Leu Gln Thr			
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885	890 895		
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Arg His Pro Ile His Val Ala Gly Gln His Arg Arg Trp Arg His Pro			
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Gly Asp Arg His Arg Gly Arg His His Ala Met Arg Thr Val Leu Arg			
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His Arg His Arg His Val Arg Cys Ala Leu Ala Pro Ser Leu Thr Asn			
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Thr Gln Pro Ile Arg Thr Trp Ala Ala Ser Cys Arg Ser Arg Ser			
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gcc atc aac gac cac gtt cgc acc gtc ctc gga ccg tcg ggc aag 5274	Ala Ile Asn Asp His Val Arg Thr Val Leu Gly Pro Ser Gly Lys		

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Cys	Val	Ala	Ala	Asp	Asp	Val	Ala	Val	Ile	Ser	Lys	His	Asp	Thr		
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2795																

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Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His
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Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu
50 55 60

Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala
65 70 75 80

Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe
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Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro
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Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr
115 120 125

Val Leu Pro Pro Val Leu Ser Ile Arg Asn Gly Arg Arg Ala Val Val
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Ile Thr Gly Thr Pro Glu Gln Leu Ser Arg Phe Glu Leu Tyr Cys Arg
145 150 155 160

Gln Ile Ser Glu Lys Glu Glu Ala Asp Arg Lys Asn Lys Val Arg Gly
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Gly Asp Val Phe Ser Pro Val Phe Glu Pro Val Gln Val Glu Val Gly
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Phe His Thr Pro Arg Leu Ser Asp Gly Ile Asp Ile Val Ala Gly Trp
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Ala Glu Lys Ala Gly Leu Asp Val Ala Leu Ala Arg Glu Leu Ala Asp
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Ala Ile Leu Ile Arg Lys Val Asp Trp Val Asp Glu Ile Thr Arg Val
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His Arg Ala Gly Ala Arg Trp Ile Leu Asp Leu Gly Pro Gly Asp Ile
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Leu Thr Arg Leu Thr Ala Pro Val Ile Arg Gly Leu Gly Ile Gly Ile
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Val Pro Ala Arg Thr Arg Gly Gly Gln Arg Asn Leu Phe Thr Val Gly
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Val Arg Leu Pro Asp Gly Arg Val Lys Leu Ser Thr Lys Phe Thr Arg
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Glu Gly 1955	Ala Ala Thr Ser 1960	Arg Pro Arg Leu 1965	Gly Gly Lys
Val Ser 1970	Arg Ser Arg Gly 1975	Ala Asp Pro Cys 1980	Ile Ala Val Arg
Pro His 1985	Ala Ala Gly Ala 1990	Asn Pro Glu Pro 1995	Arg Val Arg Arg
Arg Ser 2000	Cys Arg Gly Asp 2005	Arg Phe Glu Gly 2010	Phe Asp Arg Arg
Val Gly 2015	Gly Gly Ser Ala 2020	Arg Arg Gly Ala 2025	Thr Val Ile Ala
Thr Thr 2030	Ser Lys Leu Asp 2035	Glu Arg Leu Arg 2040	Phe Tyr Arg Thr
Leu Tyr 2045	Arg Asp His Ala 2050	Tyr Gly Ala Ala 2055	Leu Trp Leu Val
Ala Ala 2060	Asn Met Ala Ser 2065	Ser Asp Val Asp 2070	Ala Leu Val Glu
Trp Ile 2075	Gly Thr Glu Gln 2080	Glu Ser Leu Gly 2085	Pro Gln Ser Ile
His Ile 2090	Lys Asp Ala Gln 2095	Pro Thr Leu Leu 2100	Phe Arg Ser Arg
Arg Thr 2105	Arg Val Gly Thr 2110	Gly Gly Arg Phe 2115	Ala Arg Arg Asp
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Ala Arg	Ala His Arg Leu	Asp	Pro Arg His Arg	Ala	Asp Gly Pro
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Leu Leu	Asp Arg Arg Asp	Gly	Ala Ala Ala Ala	Arg	Pro Val Ser
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Cys Gly	Ile Gln Gly Gly	Cys	Gly Arg Ser Pro	Ile	Lys Ala Asp
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Arg Pro	Arg Arg Ala Ser	Arg	Cys Arg Gln Arg	Arg	Pro Ser Thr
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Arg Thr	Pro Arg Pro Leu	Ala	Pro Ser Pro Arg	Cys	Arg Arg Arg
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Pro Gly	Phe Thr Pro Ala	Pro	Pro Pro Gln Trp	Asp	Asp Leu Asp
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 Val Ala Asp Phe Gly Leu Ser Arg Leu Met Thr Gly Asp Thr Tyr Thr
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 Ala His Ala Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro Glu Ser
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 Cys Thr Gly Thr Asp Met Lys Leu Arg Leu Pro Ala Ser Pro Glu Thr
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 His Leu Asp Met Leu Arg His Leu Tyr Gln Gly Cys Gln Val Val Gln
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 Gly Asn Leu Glu Leu Thr Tyr Val Pro Ala Asn Ala Ser Leu Ser Phe
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Gln Leu Phe Glu Asp Lys Tyr Ala Leu Ala Val Leu Asp Asn Arg Asp	
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Leu Thr Tyr Val Pro Ala Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile
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Gln Glu Val Gln Gly Tyr Met Leu Ile Ala His Asn Gln Val Lys Arg
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Val Pro Leu Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu
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Asp Lys Tyr Ala Leu Ala Val Leu Asp Asn Arg Asp Pro Gln Asp Asn
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Val Ala Ala Ser Thr Pro Gly Arg Thr Pro Glu Gly Leu Arg Glu Leu
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Gln Leu Arg Ser Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Arg
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Gly Asn Pro Gln Leu Cys Tyr Gln Asp Met Val Leu Trp Lys Asp Val
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Phe Arg Lys Asn Asn Gln Leu Ala Pro Val Asp Ile Asp Thr Asn Arg
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Ser Arg Ala Cys Pro Pro Cys Ala Pro Ala Cys Lys Asp Asn His Cys

195

200

205

Trp Gly Glu Ser Pro Glu Asp Cys Gln Ile Leu Thr Gly Thr Ile Cys
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Thr Ser Gly Cys Ala Arg Cys Lys Gly Arg Leu Pro Thr Asp Cys Cys
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His Glu Gln Cys Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp Cys
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Leu Ala Cys Leu His Phe Asn His Ser Gly Ile Cys Glu Leu His Cys
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Pro Ala Leu Val Thr Tyr Asn Thr Asp Thr Phe Glu Ser Met His Asn
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Pro Glu Gly Arg Tyr Thr Phe Gly Ala Ser Cys Val Thr Thr Cys Pro
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Tyr Asn Tyr Leu Ser Thr Glu Val Gly Ser Cys Thr Leu Val Cys Pro
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Pro Asn Asn Gln Glu Val Thr Ala Glu Asp Gly Thr Gln Arg Cys Glu
 325 330 335

Lys Cys Ser Lys Pro Cys Ala Arg Val Cys Tyr Gly Leu Gly Met Glu
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His Leu Arg Gly Ala Arg Ala Ile Thr Ser Asp Asn Val Gln Glu Phe
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Asp Gly Cys Lys Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro Glu Ser
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Phe Asp Gly Asp Pro Ser Ser Gly Ile Ala Pro Leu Arg Pro Glu Gln
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Leu Gln Val Phe Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile
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Ser Ala Trp Pro Asp Ser Leu Arg Asp Leu Ser Val Phe Gln Asn Leu
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Arg Ile Ile Arg Gly Arg Ile Leu His Asp Gly Ala Tyr Ser Leu Thr

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Leu Gln Gly Leu Gly Ile His Ser Leu Gly Leu Arg Ser Leu Arg Glu
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Glu Gly Ile Cys Gln Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val
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Asp Leu Asp Glu Arg Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Val
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Val Val Val Val Gly Ile Leu Ile Lys Arg Arg Arg Gln Lys Ile Arg

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680

685

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 Gly Thr Val Tyr Lys Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys
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 Glu Tyr His Ala Asp Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu
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920

925

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Val Lys Cys Trp Met Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu
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Leu Val Ser Glu Phe Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val
980 985 990

Val Ile Gln Asn Glu Asp Leu Gly Pro Ser Ser Pro Met Asp Ser Thr
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Phe Tyr Arg Ser Leu Leu Glu Asp Asp Asp Met Gly Asp Leu Val
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Asp Ala Glu Glu Tyr Leu Val Pro Gln Gln Gly Phe Phe Ser Pro
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Tyr Val Asn Gln Ser Glu Val Gln Pro Gln Pro Pro Leu Thr Pro

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Pro Arg	Glu Gly	Thr Ala	Ser	Pro Pro	His Pro	Ser	Pro Ala	Phe														
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Val	Lys	Trp	Asn	Pro	Pro	Ser	Leu	Pro	Asn	Gly	Asn	Leu	Ser	Tyr	Tyr	
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Gly Gln Pro Thr	Leu Val Ile Met	Glu	Leu Met Thr Arg	Gly	Asp	
1075		1080		1085		
ctc aaa agt tat	ctc cgg tct ctg	agg	cca gaa atg gag	aat	aat	3348
Leu Lys Ser Tyr	Leu Arg Ser Leu	Arg	Pro Glu Met Glu	Asn	Asn	
1090		1095		1100		
cca gtc cta gca	cct cca agc ctg	agc	aag atg att cag	atg	gcc	3393
Pro Val Leu Ala	Pro Pro Ser Leu	Ser	Lys Met Ile Gln	Met	Ala	
1105		1110		1115		
gga gag att gca	gac ggc atg gca	tac	ctc aac gcc aat	aag	ttc	3438
Gly Glu Ile Ala	Asp Gly Met Ala	Tyr	Leu Asn Ala Asn	Lys	Phe	
1120		1125		1130		
gtc cac aga gac	ctt gct gcc cgg	aat	tgc atg gta gcc	gaa	gat	3483
Val His Arg Asp	Leu Ala Ala Arg	Asn	Cys Met Val Ala	Glu	Asp	
1135		1140		1145		
ttc aca gtc aaa	atc gga gat ttt	ggt	atg acg cga gat	atc	tat	3528
Phe Thr Val Lys	Ile Gly Asp Phe	Gly	Met Thr Arg Asp	Ile	Tyr	
1150		1155		1160		
gag aca gac tat	tac cgg aaa gga	ggc	aaa ggg ctg ctg	ccc	gtg	3573
Glu Thr Asp Tyr	Tyr Arg Lys Gly	Gly	Lys Gly Leu Leu	Pro	Val	
1165		1170		1175		
cgc tgg atg tct	cct gag tcc ctc	aag	gat gga gtc ttc	acc	act	3618
Arg Trp Met Ser	Pro Glu Ser Leu	Lys	Asp Gly Val Phe	Thr	Thr	
1180		1185		1190		
tac tcg gac gtc	tgg tcc ttc ggg	gtc	gtc ctc tgg gag	atc	gcc	3663
Tyr Ser Asp Val	Trp Ser Phe Gly	Val	Val Leu Trp Glu	Ile	Ala	
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aca ctg gcc gag	cag ccc tac cag	ggc	ttg tcc aac gag	caa	gtc	3708
Thr Leu Ala Glu	Gln Pro Tyr Gln	Gly	Leu Ser Asn Glu	Gln	Val	
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ctt cgc ttc gtc	atg gag ggc ggc	ctt	ctg gac aag cca	gac	aac	3753
Leu Arg Phe Val	Met Glu Gly Gly	Leu	Leu Asp Lys Pro	Asp	Asn	
1225		1230		1235		
tgt cct gac atg	ctg ttt gaa ctg	atg	cgc atg tgc tgg	cag	tat	3798
Cys Pro Asp Met	Leu Phe Glu Leu	Met	Arg Met Cys Trp	Gln	Tyr	
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aac ccc aag atg	agg cct tcc ttc	ctg	gag atc atc agc	agc	atc	3843
Asn Pro Lys Met	Arg Pro Ser Phe	Leu	Glu Ile Ile Ser	Ser	Ile	
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Lys	Glu	Glu	Met	Glu	Pro	Gly	Phe	Arg	Glu	Val	Ser	Phe	Tyr	Tyr	
			1270					1275					1280		
agc	gag	gag	aac	aag	ctg	ccc	gag	ccg	gag	gag	ctg	gac	ctg	gag	3933
Ser	Glu	Glu	Asn	Lys	Leu	Pro	Glu	Pro	Glu	Glu	Leu	Asp	Leu	Glu	
			1285					1290					1295		
cca	gag	aac	atg	gag	agc	gtc	ccc	ctg	gac	ccc	tcg	gcc	tcc	tcg	3978
Pro	Glu	Asn	Met	Glu	Ser	Val	Pro	Leu	Asp	Pro	Ser	Ala	Ser	Ser	
			1300					1305					1310		
tcc	tcc	ctg	cca	ctg	ccc	gac	aga	cac	tca	gga	cac	aag	gcc	gag	4023
Ser	Ser	Leu	Pro	Leu	Pro	Asp	Arg	His	Ser	Gly	His	Lys	Ala	Glu	
			1315					1320					1325		
aac	ggc	ccc	ggc	cct	ggg	gtg	ctg	gtc	ctc	cgc	gcc	agc	ttc	gac	4068
Asn	Gly	Pro	Gly	Pro	Gly	Val	Leu	Val	Leu	Arg	Ala	Ser	Phe	Asp	
			1330					1335					1340		
gag	aga	cag	cct	tac	gcc	cac	atg	aac	ggg	ggc	cgc	aag	aac	gag	4113
Glu	Arg	Gln	Pro	Tyr	Ala	His	Met	Asn	Gly	Gly	Arg	Lys	Asn	Glu	
			1345					1350					1355		
cgg	gcc	ttg	ccg	ctg	ccc	cag	tct	tcg	acc	tgc	tga	tccttggatc			4159
Arg	Ala	Leu	Pro	Leu	Pro	Gln	Ser	Ser	Thr	Cys					
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tcacgggcc	ggcgtgatt	cctcgtgtcc	ggaggcatgg	gtgagcatgg	cagctggttg										4819
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ctcaaggcca	caggcacaca	gggtctcattg	cttctgacta	gattattatt	tgggggaact										4939
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Cys Gly Pro Gly Ile Asp Ile Arg Asn Asp Tyr Gln Gln Leu Lys Arg
 35 40 45

Leu Glu Asn Cys Thr Val Ile Glu Gly Tyr Leu His Ile Leu Leu Ile
 50 55 60

Ser Lys Ala Glu Asp Tyr Arg Ser Tyr Arg Phe Pro Lys Leu Thr Val
 65 70 75 80

Ile Thr Glu Tyr Leu Leu Leu Phe Arg Val Ala Gly Leu Glu Ser Leu
 85 90 95

Gly Asp Leu Phe Pro Asn Leu Thr Val Ile Arg Gly Trp Lys Leu Phe
 100 105 110

Tyr Asn Tyr Ala Leu Val Ile Phe Glu Met Thr Asn Leu Lys Asp Ile
 115 120 125

Gly Leu Tyr Asn Leu Arg Asn Ile Thr Arg Gly Ala Ile Arg Ile Glu
 130 135 140

Lys Asn Ala Asp Leu Cys Tyr Leu Ser Thr Val Asp Trp Ser Leu Ile
 145 150 155 160

Leu Asp Ala Val Ser Asn Asn Tyr Ile Val Gly Asn Lys Pro Pro Lys
 165 170 175

Glu Cys Gly Asp Leu Cys Pro Gly Thr Met Glu Glu Lys Pro Met Cys
 180 185 190

Glu Lys Thr Thr Ile Asn Asn Glu Tyr Asn Tyr Arg Cys Trp Thr Thr
 195 200 205

Asn Arg Cys Gln Lys Met Cys Pro Ser Thr Cys Gly Lys Arg Ala Cys
 210 215 220

Thr Glu Asn Asn Glu Cys Cys His Pro Glu Cys Leu Gly Ser Cys Ser
 225 230 235 240

Ala Pro Asp Asn Asp Thr Ala Cys Val Ala Cys Arg His Tyr Tyr Tyr
 245 250 255

Ala Gly Val Cys Val Pro Ala Cys Pro Pro Asn Thr Tyr Arg Phe Glu
 260 265 270

Gly Trp Arg Cys Val Asp Arg Asp Phe Cys Ala Asn Ile Leu Ser Ala
 275 280 285

Glu Ser Ser Asp Ser Glu Gly Phe Val Ile His Asp Gly Glu Cys Met
 290 295 300

Gln Glu Cys Pro Ser Gly Phe Ile Arg Asn Gly Ser Gln Ser Met Tyr
 305 310 315 320

Cys Ile Pro Cys Glu Gly Pro Cys Pro Lys Val Cys Glu Glu Glu Lys
 325 330 335

Lys Thr Lys Thr Ile Asp Ser Val Thr Ser Ala Gln Met Leu Gln Gly
 340 345 350

Cys Thr Ile Phe Lys Gly Asn Leu Leu Ile Asn Ile Arg Arg Gly Asn
 355 360 365

Asn Ile Ala Ser Glu Leu Glu Asn Phe Met Gly Leu Ile Glu Val Val
 370 375 380

Thr Gly Tyr Val Lys Ile Arg His Ser His Ala Leu Val Ser Leu Ser
 385 390 395 400

Phe Leu Lys Asn Leu Arg Leu Ile Leu Gly Glu Glu Gln Leu Glu Gly
 405 410 415

Asn Tyr Ser Phe Tyr Val Leu Asp Asn Gln Asn Leu Gln Gln Leu Trp
 420 425 430

Asp Trp Asp His Arg Asn Leu Thr Ile Lys Ala Gly Lys Met Tyr Phe
 435 440 445

Ala Phe Asn Pro Lys Leu Cys Val Ser Glu Ile Tyr Arg Met Glu Glu
 450 455 460

Val Thr Gly Thr Lys Gly Arg Gln Ser Lys Gly Asp Ile Asn Thr Arg
 465 470 475 480

Asn Asn Gly Glu Arg Ala Ser Cys Glu Ser Asp Val Leu His Phe Thr
 485 490 495

Ser Thr Thr Thr Ser Lys Asn Arg Ile Ile Ile Thr Trp His Arg Tyr
500 505 510

Arg Pro Pro Asp Tyr Arg Asp Leu Ile Ser Phe Thr Val Tyr Tyr Lys
515 520 525

Glu Ala Pro Phe Lys Asn Val Thr Glu Tyr Asp Gly Gln Asp Ala Cys
530 535 540

Gly Ser Asn Ser Trp Asn Met Val Asp Val Asp Leu Pro Pro Asn Lys
545 550 555 560

Asp Val Glu Pro Gly Ile Leu Leu His Gly Leu Lys Pro Trp Thr Gln
565 570 575

Tyr Ala Val Tyr Val Lys Ala Val Thr Leu Thr Met Val Glu Asn Asp
580 585 590

His Ile Arg Gly Ala Lys Ser Glu Ile Leu Tyr Ile Arg Thr Asn Ala
595 600 605

Ser Val Pro Ser Ile Pro Leu Asp Val Leu Ser Ala Ser Asn Ser Ser
610 615 620

Ser Gln Leu Ile Val Lys Trp Asn Pro Pro Ser Leu Pro Asn Gly Asn
625 630 635 640

Leu Ser Tyr Tyr Ile Val Arg Trp Gln Arg Gln Pro Gln Asp Gly Tyr
645 650 655

Leu Tyr Arg His Asn Tyr Cys Ser Lys Asp Lys Ile Pro Ile Arg Lys
660 665 670

Tyr Ala Asp Gly Thr Ile Asp Ile Glu Glu Val Thr Glu Asn Pro Lys
675 680 685

Thr Glu Val Cys Gly Gly Glu Lys Gly Pro Cys Cys Ala Cys Pro Lys
690 695 700

Thr Glu Ala Glu Lys Gln Ala Glu Lys Glu Glu Ala Glu Tyr Arg Lys
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Val Phe Glu Asn Phe Leu His Asn Ser Ile Phe Val Pro Arg Pro Glu
725 730 735

Arg Lys Arg Arg Asp Val Met Gln Val Ala Asn Thr Thr Met Ser Ser
740 745 750

Arg Ser Arg Asn Thr Thr Ala Ala Asp Thr Tyr Asn Ile Thr Asp Pro
755 760 765

Glu Glu Leu Glu Thr Glu Tyr Pro Phe Phe Glu Ser Arg Val Asp Asn
770 775 780

Lys Glu Arg Thr Val Ile Ser Asn Leu Arg Pro Phe Thr Leu Tyr Arg
785 790 795 800

Ile Asp Ile His Ser Cys Asn His Glu Ala Glu Lys Leu Gly Cys Ser
805 810 815

Ala Ser Asn Phe Val Phe Ala Arg Thr Met Pro Ala Glu Gly Ala Asp
820 825 830

Asp Ile Pro Gly Pro Val Thr Trp Glu Pro Arg Pro Glu Asn Ser Ile
835 840 845

Phe Leu Lys Trp Pro Glu Pro Glu Asn Pro Asn Gly Leu Ile Leu Met
850 855 860

Tyr Glu Ile Lys Tyr Gly Ser Gln Val Glu Asp Gln Arg Glu Cys Val
865 870 875 880

Ser Arg Gln Glu Tyr Arg Lys Tyr Gly Gly Ala Lys Leu Asn Arg Leu
885 890 895

Asn Pro Gly Asn Tyr Thr Ala Arg Ile Gln Ala Thr Ser Leu Ser Gly
900 905 910

Asn Gly Ser Trp Thr Asp Pro Val Phe Phe Tyr Val Gln Ala Lys Thr
915 920 925

Gly Tyr Glu Asn Phe Ile His Leu Ile Ile Ala Leu Pro Val Ala Val
930 935 940

Leu Leu Ile Val Gly Gly Leu Val Ile Met Leu Tyr Val Phe His Arg
945 950 955 960

Lys Arg Asn Asn Ser Arg Leu Gly Asn Gly Val Leu Tyr Ala Ser Val
965 970 975

Asn Pro Glu Tyr Phe Ser Ala Ala Asp Val Tyr Val Pro Asp Glu Trp
 980 985 990

Glu Val Ala Arg Glu Lys Ile Thr Met Ser Arg Glu Leu Gly Gln Gly
 995 1000 1005

Ser Phe Gly Met Val Tyr Glu Gly Val Ala Lys Gly Val Val Lys
 1010 1015 1020

Asp Glu Pro Glu Thr Arg Val Ala Ile Lys Thr Val Asn Glu Ala
 1025 1030 1035

Ala Ser Met Arg Glu Arg Ile Glu Phe Leu Asn Glu Ala Ser Val
 1040 1045 1050

Met Lys Glu Phe Asn Cys His His Val Val Arg Leu Leu Gly Val
 1055 1060 1065

Val Ser Gln Gly Gln Pro Thr Leu Val Ile Met Glu Leu Met Thr
 1070 1075 1080

Arg Gly Asp Leu Lys Ser Tyr Leu Arg Ser Leu Arg Pro Glu Met
 1085 1090 1095

Glu Asn Asn Pro Val Leu Ala Pro Pro Ser Leu Ser Lys Met Ile
 1100 1105 1110

Gln Met Ala Gly Glu Ile Ala Asp Gly Met Ala Tyr Leu Asn Ala
 1115 1120 1125

Asn Lys Phe Val His Arg Asp Leu Ala Ala Arg Asn Cys Met Val
 1130 1135 1140

Ala Glu Asp Phe Thr Val Lys Ile Gly Asp Phe Gly Met Thr Arg
 1145 1150 1155

Asp Ile Tyr Glu Thr Asp Tyr Tyr Arg Lys Gly Gly Lys Gly Leu
 1160 1165 1170

Leu Pro Val Arg Trp Met Ser Pro Glu Ser Leu Lys Asp Gly Val
 1175 1180 1185

Phe Thr Thr Tyr Ser Asp Val Trp Ser Phe Gly Val Val Leu Trp
 1190 1195 1200

(The following information was obtained from the above sources.)

Glu Gln Val Leu Arg Phe Val Met Glu Gly Gly Leu Leu Asp Lys
1220 1225 1230

Pro Asp Asn Cys Pro Asp Met Leu Phe Glu Leu Met Arg Met Cys
1235 1240 1245

Trp Gln Tyr Asn Pro Lys Met Arg Pro Ser Phe Leu Glu Ile Ile
1250 1255 1260

Ser Ser Ile Lys Glu Glu Met Glu Pro Gly Phe Arg Glu Val Ser
1265 1270 1275

Phe Tyr Tyr Ser Glu Glu Asn Lys Leu Pro Glu Pro Glu Glu Leu
1280 1285 1290

Asp Leu Glu Pro Glu Asn Met Glu Ser Val Pro Leu Asp Pro Ser
1295 1300 1305

Ala Ser Ser Ser Ser Leu Pro Leu Pro Asp Arg His Ser Gly His
1310 1315 1320

Lys Ala Glu Asn Gly Pro Gly Pro Gly Val Leu Val Leu Arg Ala
1325 1330 1335

Ser Phe Asp Glu Arg Gln Pro Tyr Ala His Met Asn Gly Gly Arg
1340 1345 1350

Lys Asn Glu Arg Ala Leu Pro Leu Pro Gln Ser Ser Thr Cys
1355 1360 1365

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Met Asn Phe Leu Leu Ser Trp Val His Trp Ser Leu
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gcc ttg ctg ctc tac ctc cac cat gcc aag tgg tcc cag gct gca ccc 100
Ala Leu Leu Leu Tyr Leu His His Ala Lys Trp Ser Gln Ala Ala Pro
15 20 25

atg gca gaa gga ggg ggg cag aat cat cac gaa gtg gtg aag ttc atg 148
Met Ala Glu Gly Gly Gly Gln Asn His His Glu Val Val Lys Phe Met

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gat gtc tat cag cgc agc tac tgc cat cca atc gag acc ctg gtg gac			196
Asp Val Tyr Gln Arg Ser Tyr Cys His Pro Ile Glu Thr Leu Val Asp			
45	50	55	60
atc ttc cag gag tac cct gat gag atc gag tac atc ttc aag cca tcc			244
Ile Phe Gln Glu Tyr Pro Asp Glu Ile Glu Tyr Ile Phe Lys Pro Ser			
	65	70	75
tgt gtg ccc ctg atg cga tgc ggg ggc tgc tgc aat gac gag ggc ctg			292
Cys Val Pro Leu Met Arg Cys Gly Gly Cys Cys Asn Asp Glu Gly Leu			
	80	85	90
gag tgt gtg ccc act gag gag tcc aac atc acc atg cag att atg cgg			340
Glu Cys Val Pro Thr Glu Glu Ser Asn Ile Thr Met Gln Ile Met Arg			
	95	100	105
atc aaa cct cac caa ggc cag cac ata gga gag atg agc ttc cta cag			388
Ile Lys Pro His Gln Gly Gln His Ile Gly Glu Met Ser Phe Leu Gln			
	110	115	120
cac aac aaa tgt gaa tgc aga cca aag aaa gat aga gca aga caa gaa			436
His Asn Lys Cys Glu Cys Arg Pro Lys Lys Asp Arg Ala Arg Gln Glu			
	125	130	140
aat ccc tgt ggg cct tgc tca gag cgg aga aag cat ttg ttt gta caa			484
Asn Pro Cys Gly Pro Cys Ser Glu Arg Arg Lys His Leu Phe Val Gln			
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gat ccg cag acg tgt aaa tgt tcc tgc aaa aac aca gac tcg cgt tgc			532
Asp Pro Gln Thr Cys Lys Cys Ser Cys Lys Asn Thr Asp Ser Arg Cys			
	160	165	170
aag gcg agg cag ctt gag tta aac gaa cgt act tgc aga tgt gac aag			580
Lys Ala Arg Gln Leu Glu Leu Asn Glu Arg Thr Cys Arg Cys Asp Lys			
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Pro Arg Arg			
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ccagatct			640

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Tyr Leu His His Ala Lys Trp Ser Gln Ala Ala Pro Met Ala Glu Gly
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Gly Gly Gln Asn His His Glu Val Val Lys Phe Met Asp Val Tyr Gln
35 40 45

Arg Ser Tyr Cys His Pro Ile Glu Thr Leu Val Asp Ile Phe Gln Glu

50

55

60

Tyr Pro Asp Glu Ile Glu Tyr Ile Phe Lys Pro Ser Cys Val Pro Leu
65 70 75 80

Met Arg Cys Gly Gly Cys Cys Asn Asp Glu Gly Leu Glu Cys Val Pro
85 90 95

Thr Glu Glu Ser Asn Ile Thr Met Gln Ile Met Arg Ile Lys Pro His
100 105 110

Gln Gly Gln His Ile Gly Glu Met Ser Phe Leu Gln His Asn Lys Cys
115 120 125

Glu Cys Arg Pro Lys Lys Asp Arg Ala Arg Gln Glu Asn Pro Cys Gly
130 135 140

Pro Cys Ser Glu Arg Arg Lys His Leu Phe Val Gln Asp Pro Gln Thr
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Cys Lys Cys Ser Cys Lys Asn Thr Asp Ser Arg Cys Lys Ala Arg Gln
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Leu Glu Leu Asn Glu Arg Thr Cys Arg Cys Asp Lys Pro Arg Arg
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Met Ala Cys Pro Trp Lys Phe Leu Phe Lys Val Lys
1 5 10
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Ser Tyr Gln Ser Asp Leu Lys Glu Glu Lys Asp Ile Asn Asn Asn Val
15 20 25
aag aaa acc cct tgt gct gtt ctc agc cca aca ata caa gat gac cct 387
Lys Lys Thr Pro Cys Ala Val Leu Ser Pro Thr Ile Gln Asp Asp Pro
30 35 40
aag agt cac caa aat ggc tcc ccg cag ctc ctc act ggg aca gca cag 435

Ile	Asp	Leu	Gly	Trp	Lys	Pro	Arg	Tyr	Gly	Arg	Phe	Asp	Val	Leu	Pro		
285					290					295					300		
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Leu	Val	Leu	Gln	Ala	Asp	Gly	Gln	Asp	Pro	Glu	Val	Phe	Glu	Ile	Pro		
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cct	gat	ctt	gtg	ttg	gag	gtg	acc	atg	gag	cat	ccc	aag	tac	gag	tgg	1251	
Pro	Asp	Leu	Val	Leu	Glu	Val	Thr	Met	Glu	His	Pro	Lys	Tyr	Glu	Trp		
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ttc	cag	gag	ctc	ggg	ttg	aag	tgg	tat	gca	ctg	cct	gcc	gtg	gcc	aac	1299	
Phe	Gln	Glu	Leu	Gly	Leu	Lys	Trp	Tyr	Ala	Leu	Pro	Ala	Val	Ala	Asn		
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atg	cta	ctg	gag	gtg	ggg	ggc	ctc	gaa	ttc	cca	gcc	tgc	ccc	ttc	aat	1347	
Met	Leu	Leu	Glu	Val	Gly	Gly	Leu	Glu	Phe	Pro	Ala	Cys	Pro	Phe	Asn		
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Gln	Arg	Tyr	Asn	Ile	Leu	Glu	Glu	Val	Gly	Arg	Arg	Met	Gly	Leu	Glu		
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acc	cac	aca	ctg	gcc	tcc	ctc	tgg	aaa	gac	cgg	gct	gtc	acg	gag	atc	1491	
Thr	His	Thr	Leu	Ala	Ser	Leu	Trp	Lys	Asp	Arg	Ala	Val	Thr	Glu	Ile		
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Asn	Val	Ala	Val	Leu	His	Ser	Phe	Gln	Lys	Gln	Asn	Val	Thr	Ile	Met		
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gac	cac	cac	aca	gcc	tca	gag	tcc	ttc	atg	aag	cac	atg	cag	aat	gag	1587	
Asp	His	His	Thr	Ala	Ser	Glu	Ser	Phe	Met	Lys	His	Met	Gln	Asn	Glu		
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Tyr	Arg	Ala	Arg	Gly	Gly	Cys	Pro	Ala	Asp	Trp	Ile	Trp	Leu	Val	Pro		
445				450					455						460		
cca	gtg	tct	ggg	agc	atc	acc	cct	gtg	ttc	cac	cag	gag	atg	ttg	aac	1683	
Pro	Val	Ser	Gly	Ser	Ile	Thr	Pro	Val	Phe	His	Gln	Glu	Met	Leu	Asn		
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Tyr	Val	Leu	Ser	Pro	Phe	Tyr	Tyr	Tyr	Gln	Ile	Glu	Pro	Trp	Lys	Thr		
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His	Ile	Trp	Gln	Asn	Glu	Lys	Leu	Arg	Pro	Arg	Arg	Arg	Glu	Ile	Arg		
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Phe	Arg	Val	Leu	Val	Lys	Val	Val	Phe	Phe	Ala	Ser	Met	Leu	Met	Arg		
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Lys Val Met Ala Ser Arg Val Arg Ala Thr Val Leu Phe Ala Thr Glu	
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Thr Gly Lys Ser Glu Ala Leu Ala Arg Asp Leu Ala Thr Leu Phe Ser	
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tac gcc ttc aac acc aag gtt gtc tgc atg gac cag tat aag gca agc	1971
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Ile Lys Arg Gly Ile Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu	
160 165 170	
gaa gcc aag caa gtg ttg ttt ctg gat acc gtg tat gga aac tgc tcc	639
Glu Ala Lys Gln Val Leu Phe Leu Asp Thr Val Tyr Gly Asn Cys Ser	
175 180 185	
act cac ttt acc gtc aag acg agg aag ggc aat gtg gca aca gaa ata	687
Thr His Phe Thr Val Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile	
190 195 200	
tcc act gaa aga gac ctg ggg cag tgt gat cgc ttc aag ccc atc cgc	735
Ser Thr Glu Arg Asp Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg	
205 210 215	
aca ggc atc agc cca ctt gct ctc atc aaa ggc atg acc cgc ccc ttg	783
Thr Gly Ile Ser Pro Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu	
220 225 230 235	
tca act ctg atc agc agc agc cag tcc tgt cag tac aca ctg gac gct	831
Ser Thr Leu Ile Ser Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala	
240 245 250	
aag agg aag cat gtg gca gaa gcc atc tgc aag gag caa cac ctc ttc	879
Lys Arg Lys His Val Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe	
255 260 265	
ctg cct ttc tcc tac aag aat aag tat ggg atg gta gca caa gtg aca	927
Leu Pro Phe Ser Tyr Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr	
270 275 280	
cag act ttg aaa ctt gaa gac aca cca aag atc aac agc cgc ttc ttt	975
Gln Thr Leu Lys Leu Glu Asp Thr Pro Lys Ile Asn Ser Arg Phe Phe	
285 290 295	
ggt gaa ggt act aag aag atg ggc ctc gca ttt gag agc acc aaa tcc	1023
Gly Glu Gly Thr Lys Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser	
300 305 310 315	
aca tca cct cca aag cag gcc gaa gct gtt ttg aag act gtc cag gaa	1071
Thr Ser Pro Pro Lys Gln Ala Glu Ala Val Leu Lys Thr Val Gln Glu	
320 325 330	
ctg aaa aaa cta acc atc tct gag caa aat atc cag aga gct aat ctc	1119
Leu Lys Lys Leu Thr Ile Ser Glu Gln Asn Ile Gln Arg Ala Asn Leu	
335 340 345	
ttc aat aag ctg gtt act gag ctg aga ggc ctc agt gat gaa gca gtc	1167

Phe	Asn	Lys	Leu	Val	Thr	Glu	Leu	Arg	Gly	Leu	Ser	Asp	Glu	Ala	Val		
		350					355					360					
aca	tct	ctc	ttg	cca	cag	ctg	att	gag	gtg	tcc	agc	ccc	atc	act	tta	1215	
Thr	Ser	Leu	Leu	Pro	Gln	Leu	Ile	Glu	Val	Ser	Ser	Pro	Ile	Thr	Leu		
	365					370				375							
caa	gcc	ttg	gtt	cag	tgt	gga	cag	cct	cag	tgc	tcc	act	cac	atc	ctc	1263	
Gln	Ala	Leu	Val	Gln	Cys	Gly	Gln	Pro	Gln	Cys	Ser	Thr	His	Ile	Leu		
380				385					390						395		
cag	tgg	ctg	aaa	cgt	gtg	cat	gcc	aac	ccc	ctt	ctg	ata	gat	gtg	gtc	1311	
Gln	Trp	Leu	Lys	Arg	Val	His	Ala	Asn	Pro	Leu	Leu	Ile	Asp	Val	Val		
				400				405					410				
acc	tac	ctg	gtg	gcc	ctg	atc	ccc	gag	ccc	tca	gca	cag	cag	ctg	cga	1359	
Thr	Tyr	Leu	Val	Ala	Leu	Ile	Pro	Glu	Pro	Ser	Ala	Gln	Gln	Leu	Arg		
			415					420					425				
gag	atc	ttc	aac	atg	gcg	agg	gat	cag	cgc	agc	cga	gcc	acc	ttg	tat	1407	
Glu	Ile	Phe	Asn	Met	Ala	Arg	Asp	Gln	Arg	Ser	Arg	Ala	Thr	Leu	Tyr		
		430					435					440					
gcg	ctg	agc	cac	gcg	gtc	aac	aac	tat	cat	aag	aca	aac	cct	aca	ggg	1455	
Ala	Leu	Ser	His	Ala	Val	Asn	Asn	Tyr	His	Lys	Thr	Asn	Pro	Thr	Gly		
	445					450					455						
acc	cag	gag	ctg	ctg	gac	att	gct	aat	tac	ctg	atg	gaa	cag	att	caa	1503	
Thr	Gln	Glu	Leu	Leu	Asp	Ile	Ala	Asn	Tyr	Leu	Met	Glu	Gln	Ile	Gln		
460					465					470					475		
gat	gac	tgc	act	ggg	gat	gaa	gat	tac	acc	tat	ttg	att	ctg	cgg	gtc	1551	
Asp	Asp	Cys	Thr	Gly	Asp	Glu	Asp	Tyr	Thr	Tyr	Leu	Ile	Leu	Arg	Val		
				480					485					490			
att	gga	aat	atg	ggc	caa	acc	atg	gag	cag	tta	act	cca	gaa	ctc	aag	1599	
Ile	Gly	Asn	Met	Gly	Gln	Thr	Met	Glu	Gln	Leu	Thr	Pro	Glu	Leu	Lys		
		495						500					505				
tct	tca	atc	ctg	aaa	tgt	gtc	caa	agt	aca	aag	cca	tca	ctg	atg	atc	1647	
Ser	Ser	Ile	Leu	Lys	Cys	Val	Gln	Ser	Thr	Lys	Pro	Ser	Leu	Met	Ile		
		510					515					520					
cag	aaa	gct	gcc	atc	cag	gct	ctg	cgg	aaa	atg	gag	cct	aaa	gac	aag	1695	
Gln	Lys	Ala	Ala	Ile	Gln	Ala	Leu	Arg	Lys	Met	Glu	Pro	Lys	Asp	Lys		
	525					530					535						
gac	cag	gag	gtt	ctt	ctt	cag	act	ttc	ctt	gat	gat	gct	tct	cgg	gga	1743	
Asp	Gln	Glu	Val	Leu	Leu	Gln	Thr	Phe	Leu	Asp	Asp	Ala	Ser	Pro	Gly		
					545					550					555		
gat	aag	cga	ctg	gct	gcc	tat	ctt	atg	ttg	atg	agg	agt	cct	tca	cag	1791	
Asp	Lys	Arg	Leu	Ala	Ala	Tyr	Leu	Met	Leu	Met	Arg	Ser	Pro	Ser	Gln		
				560					565					570			
gca	gat	att	aac	aaa	att	gtc	caa	att	cta	cca	tgg	gaa	cag	aat	gag	1839	
Ala	Asp	Ile	Asn	Lys	Ile	Val	Gln	Ile	Leu	Pro	Trp	Glu	Gln	Asn	Glu		
			575					580					585				
caa	gtg	aag	aac	ttt	gtg	gct	tcc	cat	att	gcc	aat	atc	ttg	aac	tca	1887	

Gln Val Lys Asn Phe Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser	
590	595 600
gaa gaa ttg gat atc caa gat ctg aaa aag tta gtg aaa gaa gtt ctg	1935
Glu Glu Leu Asp Ile Gln Asp Leu Lys Lys Leu Val Lys Glu Val Leu	
605	610 615
aaa gaa tct caa ctt cca act gtc atg gac ttc aga aaa ttc tct cgg	1983
Lys Glu Ser Gln Leu Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg	
620	625 630 635
aac tat caa ctc tac aaa tct gtt tct att cca tca ctt gac cca gcc	2031
Asn Tyr Gln Leu Tyr Lys Ser Val Ser Ile Pro Ser Leu Asp Pro Ala	
	640 645 650
tca gcc aaa ata gaa ggg aat ctt ata ttt gat cca aat aac tac ctt	2079
Ser Ala Lys Ile Glu Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu	
	655 660 665
cct aaa gaa agc atg ctg aaa act acc ctc act gcc ttt gga ttt gct	2127
Pro Lys Glu Ser Met Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala	
	670 675 680
tca gct gac ctc atc gag att ggc ttg gaa gga aaa ggc ttt gag cca	2175
Ser Ala Asp Leu Ile Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro	
	685 690 695
aca ttg gaa gct ctt ttt ggg aag caa gga ttt ttc cca gac agt gtc	2223
Thr Leu Glu Ala Leu Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val	
700	705 710 715
aac aaa gct ttg tac tgg gtt aat ggt caa gtt cct gat ggt gtc tct	2271
Asn Lys Ala Leu Tyr Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser	
	720 725 730
aag gtc tta gtg gac cac ttt ggc tat acc aaa gat gat aaa cat gag	2319
Lys Val Leu Val Asp His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu	
	735 740 745
cag gat atg gta aat gga ata atg ctc agt gtt gag aag ctg att aaa	2367
Gln Asp Met Val Asn Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys	
	750 755 760
gat ttg aaa tcc aaa gaa gtc ccg gaa gcc aga gcc tac ctc cgc atc	2415
Asp Leu Lys Ser Lys Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile	
	765 770 775
ttg gga gag gag ctt ggt ttt gcc agt ctc cat gac ctc cag ctc ctg	2463
Leu Gly Glu Glu Leu Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu	
	780 785 790 795
gga aag ctg ctt ctg atg ggt gcc cgc act ctg cag ggg atc ccc cag	2511
Gly Lys Leu Leu Leu Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln	
	800 805 810
atg att gga gag gtc atc agg aag ggc tca aag aat gac ttt ttt ctt	2559
Met Ile Gly Glu Val Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu	
	815 820 825
cac tac atc ttc atg gag aat gcc ttt gaa ctc ccc act gga gct gga	2607

His Tyr Ile Phe Met Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly	
830 835 840	
tta cag ttg caa ata tct tca tct gga gtc att gct ccc gga gcc aag	2655
Leu Gln Leu Gln Ile Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys	
845 850 855	
gct gga gta aaa ctg gaa gta gcc aac atg cag gct gaa ctg gtg gca	2703
Ala Gly Val Lys Leu Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala	
860 865 870 875	
aaa ccc tcc gtg tct gtg gag ttt gtg aca aat atg ggc atc atc att	2751
Lys Pro Ser Val Ser Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile	
880 885 890	
ccg gac ttc gct agg agt ggg gtc cag atg aac acc aac ttc ttc cac	2799
Pro Asp Phe Ala Arg Ser Gly Val Gln Met Asn Thr Asn Phe Phe His	
895 900 905	
gag tcg ggt ctg gag gct cat gtt gcc cta aaa cct ggg aag ctg aag	2847
Glu Ser Gly Leu Glu Ala His Val Ala Leu Lys Pro Gly Lys Leu Lys	
910 915 920	
ttt atc att cct tcc cca aag aga cca gtc aag ctg ctc agt gga ggc	2895
Phe Ile Ile Pro Ser Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly	
925 930 935	
aac aca tta cat ttg gtc tct acc acc aaa acg gag gtg atc cca cct	2943
Asn Thr Leu His Leu Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro	
940 945 950 955	
ctc att gag aac agg cag tcc tgg tca gtt tgc aag caa gtc ttt cct	2991
Leu Ile Glu Asn Arg Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro	
960 965 970	
ggc ctg aat tac tgc acc tca ggc gct tac tcc aac gcc agc tcc aca	3039
Gly Leu Asn Tyr Cys Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr	
975 980 985	
gac tcc gcc tcc tac tat ccg ctg acc ggg gac acc aga tta gag ctg	3087
Asp Ser Ala Ser Tyr Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu	
990 995 1000	
gaa ctg agg cct aca gga gag att gag cag tat tct gtc agc gca	3132
Glu Leu Arg Pro Thr Gly Glu Ile Glu Gln Tyr Ser Val Ser Ala	
1005 1010 1015	
acc tat gag ctc cag aga gag gac aga gcc ttg gtg gat acc ctg	3177
Thr Tyr Glu Leu Gln Arg Glu Asp Arg Ala Leu Val Asp Thr Leu	
1020 1025 1030	
aag ttt gta act caa gca gaa ggt gcg aag cag act gag gct acc	3222
Lys Phe Val Thr Gln Ala Glu Gly Ala Lys Gln Thr Glu Ala Thr	
1035 1040 1045	
atg aca ttc aaa tat aat cgg cag agt atg acc ttg tcc agt gaa	3267
Met Thr Phe Lys Tyr Asn Arg Gln Ser Met Thr Leu Ser Ser Glu	
1050 1055 1060	
gtc caa att ccg gat ttt gat gtt gac ctc gga aca atc ctc aga	3312

Val Gln Ile Pro Asp Phe Asp	Val Asp Leu Gly Thr	Ile Leu Arg	
1065	1070	1075	
ggt aat gat gaa tct act gag	ggc aaa acg tct tac	aga ctc acc	3357
Val Asn Asp Glu Ser Thr Glu	Gly Lys Thr Ser Tyr	Arg Leu Thr	
1080	1085	1090	
ctg gac att cag aac aag aaa	att act gag gtc gcc	ctc atg ggc	3402
Leu Asp Ile Gln Asn Lys Lys	Ile Thr Glu Val Ala	Leu Met Gly	
1095	1100	1105	
cac cta agt tgt gac aca aag	gaa gaa aga aaa atc	aag ggt gtt	3447
His Leu Ser Cys Asp Thr Lys	Glu Glu Arg Lys Ile	Lys Gly Val	
1110	1115	1120	
att tcc ata ccc cgt ttg caa	gca gaa gcc aga agt	gag atc ctc	3492
Ile Ser Ile Pro Arg Leu Gln	Ala Glu Ala Arg Ser	Glu Ile Leu	
1125	1130	1135	
gcc cac tgg tgc cct gcc aaa	ctg ctt ctc caa atg	gac tca tct	3537
Ala His Trp Ser Pro Ala Lys	Leu Leu Leu Gln Met	Asp Ser Ser	
1140	1145	1150	
gct aca gct tat ggc tcc aca	gtt tcc aag agg gtg	gca tgg cat	3582
Ala Thr Ala Tyr Gly Ser Thr	Val Ser Lys Arg Val	Ala Trp His	
1155	1160	1165	
tat gat gaa gag aag att gaa	ttt gaa tgg aac aca	ggc acc aat	3627
Tyr Asp Glu Glu Lys Ile Glu	Phe Glu Trp Asn Thr	Gly Thr Asn	
1170	1175	1180	
gta gat acc aaa aaa atg act	tcc aat ttc cct gtg	gat ctc tcc	3672
Val Asp Thr Lys Lys Met Thr	Ser Asn Phe Pro Val	Asp Leu Ser	
1185	1190	1195	
gat tat cct aag agc ttg cat	atg tat gct aat aga	ctc ctg gat	3717
Asp Tyr Pro Lys Ser Leu His	Met Tyr Ala Asn Arg	Leu Leu Asp	
1200	1205	1210	
cac aga gtc cct caa aca gac	atg act ttc cgg cac	gtg ggt tcc	3762
His Arg Val Pro Gln Thr Asp	Met Thr Phe Arg His	Val Gly Ser	
1215	1220	1225	
aaa tta ata gtt gca atg agc	tca tgg ctt cag aag	gca tct ggg	3807
Lys Leu Ile Val Ala Met Ser	Ser Trp Leu Gln Lys	Ala Ser Gly	
1230	1235	1240	
agt ctt cct tat acc cag act	ttg caa gac cac ctc	aat agc ctg	3852
Ser Leu Pro Tyr Thr Gln Thr	Leu Gln Asp His Leu	Asn Ser Leu	
1245	1250	1255	
aag gag ttc aac ctc cag aac	atg gga ttg cca gac	ttc cac atc	3897
Lys Glu Phe Asn Leu Gln Asn	Met Gly Leu Pro Asp	Phe His Ile	
1260	1265	1270	
cca gaa aac ctc ttc tta aaa	agc gat ggc cgg gtc	aaa tat acc	3942
Pro Glu Asn Leu Phe Leu Lys	Ser Asp Gly Arg Val	Lys Tyr Thr	
1275	1280	1285	
ttg aac aag aac agt ttg aaa	att gag att cct ttg	cct ttt ggt	3987

Leu	Asn	Lys	Asn	Ser	Leu	Lys	Ile	Glu	Ile	Pro	Leu	Pro	Phe	Gly		
1290						1295					1300					
ggc	aaa	tcc	tcc	aga	gat	cta	aag	atg	tta	gag	act	gtt	agg	aca	4032	
Gly	Lys	Ser	Ser	Arg	Asp	Leu	Lys	Met	Leu	Glu	Thr	Val	Arg	Thr		
1305						1310					1315					
cca	gcc	ctc	cac	ttc	aag	tct	gtg	gga	ttc	cat	ctg	cca	tct	cga	4077	
Pro	Ala	Leu	His	Phe	Lys	Ser	Val	Gly	Phe	His	Leu	Pro	Ser	Arg		
1320						1325					1330					
gag	ttc	caa	gtc	cct	act	ttt	acc	att	ccc	aag	ttg	tat	caa	ctg	4122	
Glu	Phe	Gln	Val	Pro	Thr	Phe	Thr	Ile	Pro	Lys	Leu	Tyr	Gln	Leu		
1335						1340					1345					
caa	gtg	cct	ctc	ctg	ggt	gtt	cta	gac	ctc	tcc	acg	aat	gtc	tac	4167	
Gln	Val	Pro	Leu	Leu	Gly	Val	Leu	Asp	Leu	Ser	Thr	Asn	Val	Tyr		
1350						1355					1360					
agc	aac	ttg	tac	aac	tgg	tcc	gcc	tcc	tac	agt	ggt	ggc	aac	acc	4212	
Ser	Asn	Leu	Tyr	Asn	Trp	Ser	Ala	Ser	Tyr	Ser	Gly	Gly	Asn	Thr		
1365						1370					1375					
agc	aca	gac	cat	ttc	agc	ctt	cgg	gct	cgt	tac	cac	atg	aag	gct	4257	
Ser	Thr	Asp	His	Phe	Ser	Leu	Arg	Ala	Arg	Tyr	His	Met	Lys	Ala		
1380						1385					1390					
gac	tct	gtg	gtt	gac	ctg	ctt	tcc	tac	aat	gtg	caa	gga	tct	gga	4302	
Asp	Ser	Val	Val	Asp	Leu	Leu	Ser	Tyr	Asn	Val	Gln	Gly	Ser	Gly		
1395						1400					1405					
gaa	aca	aca	tat	gac	cac	aag	aat	acg	ttc	aca	cta	tca	tgt	gat	4347	
Glu	Thr	Thr	Tyr	Asp	His	Lys	Asn	Thr	Phe	Thr	Leu	Ser	Cys	Asp		
1410						1415					1420					
ggg	tct	cta	cgc	cac	aaa	ttt	cta	gat	tcg	aat	atc	aaa	ttc	agt	4392	
Gly	Ser	Leu	Arg	His	Lys	Phe	Leu	Asp	Ser	Asn	Ile	Lys	Phe	Ser		
1425						1430					1435					
cat	gta	gaa	aaa	ctt	gga	aac	aac	cca	gtc	tca	aaa	ggt	tta	cta	4437	
His	Val	Glu	Lys	Leu	Gly	Asn	Asn	Pro	Val	Ser	Lys	Gly	Leu	Leu		
1440						1445					1450					
ata	ttc	gat	gca	tct	agt	tcc	tgg	gga	cca	cag	atg	tct	gct	tca	4482	
Ile	Phe	Asp	Ala	Ser	Ser	Ser	Trp	Gly	Pro	Gln	Met	Ser	Ala	Ser		
1455						1460					1465					
gtt	cat	ttg	gac	tcc	aaa	aag	aaa	cag	cat	ttg	ttt	gtc	aaa	gaa	4527	
Val	His	Leu	Asp	Ser	Lys	Lys	Lys	Gln	His	Leu	Phe	Val	Lys	Glu		
1470						1475					1480					
gtc	aag	att	gat	ggg	cag	ttc	aga	gtc	tct	tcg	ttc	tat	gct	aaa	4572	
Val	Lys	Ile	Asp	Gly	Gln	Phe	Arg	Val	Ser	Ser	Phe	Tyr	Ala	Lys		
1485						1490					1495					
ggc	aca	tat	ggc	ctg	tct	tgt	cag	agg	gat	cct	aac	act	ggc	cgg	4617	
Gly	Thr	Tyr	Gly	Leu	Ser	Cys	Gln	Arg	Asp	Pro	Asn	Thr	Gly	Arg		
1500						1505					1510					
ctc	aat	gga	gag	tcc	aac	ctg	agg	ttt	aac	tcc	tcc	tac	ctc	caa	4662	

Leu Asn Gly Glu Ser Asn Leu Arg Phe Asn Ser Ser Tyr Leu Gln	
1515 1520 1525	
ggc acc aac cag ata aca gga aga tat gaa gat gga acc ctc tcc	4707
Gly Thr Asn Gln Ile Thr Gly Arg Tyr Glu Asp Gly Thr Leu Ser	
1530 1535 1540	
ctc acc tcc acc tct gat ctg caa agt ggc atc att aaa aat act	4752
Leu Thr Ser Thr Ser Asp Leu Gln Ser Gly Ile Ile Lys Asn Thr	
1545 1550 1555	
gct tcc cta aag tat gag aac tac gag ctg act tta aaa tct gac	4797
Ala Ser Leu Lys Tyr Glu Asn Tyr Glu Leu Thr Leu Lys Ser Asp	
1560 1565 1570	
acc aat ggg aag tat aag aac ttt gcc act tct aac aag atg gat	4842
Thr Asn Gly Lys Tyr Lys Asn Phe Ala Thr Ser Asn Lys Met Asp	
1575 1580 1585	
atg acc ttc tct aag caa aat gca ctg ctg cgt tct gaa tat cag	4887
Met Thr Phe Ser Lys Gln Asn Ala Leu Leu Arg Ser Glu Tyr Gln	
1590 1595 1600	
gct gat tac gag tca ttg agg ttc ttc agc ctg ctt tct gga tca	4932
Ala Asp Tyr Glu Ser Leu Arg Phe Phe Ser Leu Leu Ser Gly Ser	
1605 1610 1615	
cta aat tcc cat ggt ctt gag tta aat gct gac atc tta ggc act	4977
Leu Asn Ser His Gly Leu Glu Leu Asn Ala Asp Ile Leu Gly Thr	
1620 1625 1630	
gac aaa att aat agt ggt gct cac aag gcg aca cta agg att ggc	5022
Asp Lys Ile Asn Ser Gly Ala His Lys Ala Thr Leu Arg Ile Gly	
1635 1640 1645	
caa gat gga ata tct acc agt gca acg acc aac ttg aag tgt agt	5067
Gln Asp Gly Ile Ser Thr Ser Ala Thr Thr Asn Leu Lys Cys Ser	
1650 1655 1660	
ctc ctg gtg ctg gag aat gag ctg aat gca gag ctt ggc ctc tct	5112
Leu Leu Val Leu Glu Asn Glu Leu Asn Ala Glu Leu Gly Leu Ser	
1665 1670 1675	
ggg gca tct atg aaa tta aca aca aat ggc cgc ttc agg gaa cac	5157
Gly Ala Ser Met Lys Leu Thr Thr Asn Gly Arg Phe Arg Glu His	
1680 1685 1690	
aat gca aaa ttc agt ctg gat ggg aaa gcc gcc ctc aca gag cta	5202
Asn Ala Lys Phe Ser Leu Asp Gly Lys Ala Ala Leu Thr Glu Leu	
1695 1700 1705	
tca ctg gga agt gct tat cag gcc atg att ctg ggt gtc gac agc	5247
Ser Leu Gly Ser Ala Tyr Gln Ala Met Ile Leu Gly Val Asp Ser	
1710 1715 1720	
aaa aac att ttc aac ttc aag gtc agt caa gaa gga ctt aag ctc	5292
Lys Asn Ile Phe Asn Phe Lys Val Ser Gln Glu Gly Leu Lys Leu	
1725 1730 1735	
tca aat gac atg atg ggc tca tat gct gaa atg aaa ttt gac cac	5337

Ser Asn Asp Met Met Gly Ser Tyr Ala Glu Met Lys Phe Asp His	
1740 1745 1750	
aca aac agt ctg aac att gca ggc tta tca ctg gac ttc tct tca	5382
Thr Asn Ser Leu Asn Ile Ala Gly Leu Ser Leu Asp Phe Ser Ser	
1755 1760 1765	
aaa ctt gac aac att tac agc tct gac aag ttt tat aag caa act	5427
Lys Leu Asp Asn Ile Tyr Ser Ser Asp Lys Phe Tyr Lys Gln Thr	
1770 1775 1780	
gtt aat tta cag cta cag ccc tat tct ctg gta act act tta aac	5472
Val Asn Leu Gln Leu Gln Pro Tyr Ser Leu Val Thr Thr Leu Asn	
1785 1790 1795	
agt gac ctg aaa tac aat gct ctg gat ctc acc aac aat ggg aaa	5517
Ser Asp Leu Lys Tyr Asn Ala Leu Asp Leu Thr Asn Asn Gly Lys	
1800 1805 1810	
cta cgg cta gaa ccc ctg aag ctg cat gtg gct ggt aac cta aaa	5562
Leu Arg Leu Glu Pro Leu Lys Leu His Val Ala Gly Asn Leu Lys	
1815 1820 1825	
gga gcc tac caa aat aat gaa ata aaa cac atc tat gcc atc tct	5607
Gly Ala Tyr Gln Asn Asn Glu Ile Lys His Ile Tyr Ala Ile Ser	
1830 1835 1840	
tct gct gcc tta tca gca agc tat aaa gca gac act gtt gct aag	5652
Ser Ala Ala Leu Ser Ala Ser Tyr Lys Ala Asp Thr Val Ala Lys	
1845 1850 1855	
gtt cag ggt gtg gag ttt agc cat cgg ctc aac aca gac atc gct	5697
Val Gln Gly Val Glu Phe Ser His Arg Leu Asn Thr Asp Ile Ala	
1860 1865 1870	
ggg ctg gct tca gcc att gac atg agc aca aac tat aat tca gac	5742
Gly Leu Ala Ser Ala Ile Asp Met Ser Thr Asn Tyr Asn Ser Asp	
1875 1880 1885	
tca ctg cat ttc agc aat gtc ttc cgt tct gta atg gcc ccg ttt	5787
Ser Leu His Phe Ser Asn Val Phe Arg Ser Val Met Ala Pro Phe	
1890 1895 1900	
acc atg acc atc gat gca cat aca aat ggc aat ggg aaa ctc gct	5832
Thr Met Thr Ile Asp Ala His Thr Asn Gly Asn Gly Lys Leu Ala	
1905 1910 1915	
ctc tgg gga gaa cat act ggg cag ctg tat agc aaa ttc ctg ttg	5877
Leu Trp Gly Glu His Thr Gly Gln Leu Tyr Ser Lys Phe Leu Leu	
1920 1925 1930	
aaa gca gaa cct ctg gca ttt act ttc tct cat gat tac aaa ggc	5922
Lys Ala Glu Pro Leu Ala Phe Thr Phe Ser His Asp Tyr Lys Gly	
1935 1940 1945	
tcc aca agt cat cat ctc gtg tct agg aaa agc atc agt gca gct	5967
Ser Thr Ser His His Leu Val Ser Arg Lys Ser Ile Ser Ala Ala	
1950 1955 1960	
ctt gaa cac aaa gtc agt gcc ctg ctt act cca gct gag cag aca	6012

Leu Glu	His Lys Val Ser Ala	Leu Leu Thr Pro Ala	Glu Gln Thr	
1965	1970	1975		
ggc acc	tgg aaa ctc aag acc	caa ttt aac aac aat	gaa tac agc	6057
Gly Thr	Trp Lys Leu Lys Thr	Gln Phe Asn Asn Asn	Glu Tyr Ser	
1980	1985	1990		
cag gac	ttg gat gct tac aac	act aaa gat aaa att	ggc gtg gag	6102
Gln Asp	Leu Asp Ala Tyr Asn	Thr Lys Asp Lys Ile	Gly Val Glu	
1995	2000	2005		
ctt act	gga cga act ctg gct	gac cta act cta cta	gac tcc cca	6147
Leu Thr	Gly Arg Thr Leu Ala	Asp Leu Thr Leu Leu	Asp Ser Pro	
2010	2015	2020		
att aaa	gtg cca ctt tta ctc	agt gag ccc atc aat	atc att gat	6192
Ile Lys	Val Pro Leu Leu Leu	Ser Glu Pro Ile Asn	Ile Ile Asp	
2025	2030	2035		
gct tta	gag atg aga gat gcc	gtt gag aag ccc caa	gaa ttt aca	6237
Ala Leu	Glu Met Arg Asp Ala	Val Glu Lys Pro Gln	Glu Phe Thr	
2040	2045	2050		
att gtt	gct ttt gta aag tat	gat aaa aac caa gat	gtt cac tcc	6282
Ile Val	Ala Phe Val Lys Tyr	Asp Lys Asn Gln Asp	Val His Ser	
2055	2060	2065		
att aac	ctc cca ttt ttt gag	acc ttg caa gaa tat	ttt gag agg	6327
Ile Asn	Leu Pro Phe Phe Glu	Thr Leu Gln Glu Tyr	Phe Glu Arg	
2070	2075	2080		
aat cga	caa acc att ata gtt	gta ctg gaa aac gta	cag aga aac	6372
Asn Arg	Gln Thr Ile Ile Val	Val Leu Glu Asn Val	Gln Arg Asn	
2085	2090	2095		
ctg aag	cac atc aat att gat	caa ttt gta aga aaa	tac aga gca	6417
Leu Lys	His Ile Asn Ile Asp	Gln Phe Val Arg Lys	Tyr Arg Ala	
2100	2105	2110		
gcc ctg	gga aaa ctc cca cag	caa gct aat gat tat	ctg aat tca	6462
Ala Leu	Gly Lys Leu Pro Gln	Gln Ala Asn Asp Tyr	Leu Asn Ser	
2115	2120	2125		
ttc aat	tgg gag aga caa gtt	tca cat gcc aag gag	aaa ctg act	6507
Phe Asn	Trp Glu Arg Gln Val	Ser His Ala Lys Glu	Lys Leu Thr	
2130	2135	2140		
gct ctc	aca aaa aag tat aga	att aca gaa aat gat	ata caa att	6552
Ala Leu	Thr Lys Lys Tyr Arg	Ile Thr Glu Asn Asp	Ile Gln Ile	
2145	2150	2155		
gca tta	gat gat gcc aaa atc	aac ttt aat gaa aaa	cta tct caa	6597
Ala Leu	Asp Asp Ala Lys Ile	Asn Phe Asn Glu Lys	Leu Ser Gln	
2160	2165	2170		
ctg cag	aca tat atg ata caa	ttt gat cag tat att	aaa gat agt	6642
Leu Gln	Thr Tyr Met Ile Gln	Phe Asp Gln Tyr Ile	Lys Asp Ser	
2175	2180	2185		
tat gat	tta cat gat ttg aaa	ata gct att gct aat	att att gat	6687

Tyr	Asp	Leu	His	Asp	Leu	Lys	Ile	Ala	Ile	Ala	Asn	Ile	Ile	Asp	
2190						2195					2200				
gaa	atc	att	gaa	aaa	tta	aaa	agt	ctt	gat	gag	cac	tat	cat	atc	6732
Glu	Ile	Ile	Glu	Lys	Leu	Lys	Ser	Leu	Asp	Glu	His	Tyr	His	Ile	
2205						2210					2215				
cgt	gta	aat	tta	gta	aaa	aca	atc	cat	gat	cta	cat	ttg	ttt	att	6777
Arg	Val	Asn	Leu	Val	Lys	Thr	Ile	His	Asp	Leu	His	Leu	Phe	Ile	
2220						2225					2230				
gaa	aat	att	gat	ttt	aac	aaa	agt	gga	agt	agt	act	gca	tcc	tg	6822
Glu	Asn	Ile	Asp	Phe	Asn	Lys	Ser	Gly	Ser	Ser	Thr	Ala	Ser	Trp	
2235						2240					2245				
att	caa	aat	gtg	gat	act	aag	tac	caa	atc	aga	atc	cag	ata	caa	6867
Ile	Gln	Asn	Val	Asp	Thr	Lys	Tyr	Gln	Ile	Arg	Ile	Gln	Ile	Gln	
2250						2255					2260				
gaa	aaa	ctg	cag	cag	ctt	aag	aga	cac	ata	cag	aat	ata	gac	atc	6912
Glu	Lys	Leu	Gln	Gln	Leu	Lys	Arg	His	Ile	Gln	Asn	Ile	Asp	Ile	
2265						2270					2275				
cag	cac	cta	gct	gga	aag	tta	aaa	caa	cac	att	gag	gct	att	gat	6957
Gln	His	Leu	Ala	Gly	Lys	Leu	Lys	Gln	His	Ile	Glu	Ala	Ile	Asp	
2280						2285					2290				
gtt	aga	gtg	ctt	tta	gat	caa	ttg	gga	act	aca	att	tca	ttt	gaa	7002
Val	Arg	Val	Leu	Leu	Asp	Gln	Leu	Gly	Thr	Thr	Ile	Ser	Phe	Glu	
2295						2300					2305				
aga	ata	aat	gat	gtt	ctt	gag	cat	gtc	aaa	cac	ttt	gtt	ata	aat	7047
Arg	Ile	Asn	Asp	Val	Leu	Glu	His	Val	Lys	His	Phe	Val	Ile	Asn	
2310						2315					2320				
ctt	att	ggg	gat	ttt	gaa	gta	gct	gag	aaa	atc	aat	gcc	ttc	aga	7092
Leu	Ile	Gly	Asp	Phe	Glu	Val	Ala	Glu	Lys	Ile	Asn	Ala	Phe	Arg	
2325						2330					2335				
gcc	aaa	gtc	cat	gag	tta	atc	gag	agg	tat	gaa	gta	gac	caa	caa	7137
Ala	Lys	Val	His	Glu	Leu	Ile	Glu	Arg	Tyr	Glu	Val	Asp	Gln	Gln	
2340						2345					2350				
atc	cag	gtt	tta	atg	gat	aaa	tta	gta	gag	ttg	gcc	cac	caa	tac	7182
Ile	Gln	Val	Leu	Met	Asp	Lys	Leu	Val	Glu	Leu	Ala	His	Gln	Tyr	
2355						2360					2365				
aag	ttg	aag	gag	act	att	cag	aag	cta	agc	aat	gtc	cta	caa	caa	7227
Lys	Leu	Lys	Glu	Thr	Ile	Gln	Lys	Leu	Ser	Asn	Val	Leu	Gln	Gln	
2370						2375					2380				
gtt	aag	ata	aaa	gat	tac	ttt	gag	aaa	ttg	gtt	gga	ttt	att	gat	7272
Val	Lys	Ile	Lys	Asp	Tyr	Phe	Glu	Lys	Leu	Val	Gly	Phe	Ile	Asp	
2385						2390					2395				
gat	gct	gtc	aag	aag	ctt	aat	gaa	tta	tct	ttt	aaa	aca	ttc	att	7317
Asp	Ala	Val	Lys	Lys	Leu	Asn	Glu	Leu	Ser	Phe	Lys	Thr	Phe	Ile	
2400						2405					2410				
gaa	gat	gtt	aac	aaa	ttc	ctt	gac	atg	ttg	ata	aag	aaa	tta	aag	7362

Glu Asp Val Asn Lys Phe Leu Asp Met Leu Ile Lys Lys Leu Lys	
2415 2420 2425	
tca ttt gat tac cac cag ttt gta gat gaa acc aat gac aaa atc	7407
Ser Phe Asp Tyr His Gln Phe Val Asp Glu Thr Asn Asp Lys Ile	
2430 2435 2440	
cgt gag gtg act cag aga ctc aat ggt gaa att cag gct ctg gaa	7452
Arg Glu Val Thr Gln Arg Leu Asn Gly Glu Ile Gln Ala Leu Glu	
2445 2450 2455	
cta cca caa aaa gct gaa gca tta aaa ctg ttt tta gag gaa acc	7497
Leu Pro Gln Lys Ala Glu Ala Leu Lys Leu Phe Leu Glu Glu Thr	
2460 2465 2470	
aag gcc aca gtt gca gtg tat ctg gaa agc cta cag gac acc aaa	7542
Lys Ala Thr Val Ala Val Tyr Leu Glu Ser Leu Gln Asp Thr Lys	
2475 2480 2485	
ata acc tta atc atc aat tgg tta cag gag gct tta agt tca gca	7587
Ile Thr Leu Ile Ile Asn Trp Leu Gln Glu Ala Leu Ser Ser Ala	
2490 2495 2500	
tct ttg gct cac atg aag gcc aaa ttc cga gag act cta gaa gat	7632
Ser Leu Ala His Met Lys Ala Lys Phe Arg Glu Thr Leu Glu Asp	
2505 2510 2515	
aca cga gac cga atg tat caa atg gac att cag cag gaa ctt caa	7677
Thr Arg Asp Arg Met Tyr Gln Met Asp Ile Gln Gln Glu Leu Gln	
2520 2525 2530	
cga tac ctg tct ctg gta ggc cag gtt tat agc aca ctt gtc acc	7722
Arg Tyr Leu Ser Leu Val Gly Gln Val Tyr Ser Thr Leu Val Thr	
2535 2540 2545	
tac att tct gat tgg tgg act ctt gct gct aag aac ctt act gac	7767
Tyr Ile Ser Asp Trp Trp Thr Leu Ala Ala Lys Asn Leu Thr Asp	
2550 2555 2560	
ttt gca gag caa tat tct atc caa gat tgg gct aaa cgt atg aaa	7812
Phe Ala Glu Gln Tyr Ser Ile Gln Asp Trp Ala Lys Arg Met Lys	
2565 2570 2575	
gca ttg gta gag caa ggg ttc act gtt cct gaa atc aag acc atc	7857
Ala Leu Val Glu Gln Gly Phe Thr Val Pro Glu Ile Lys Thr Ile	
2580 2585 2590	
ctt ggg acc atg cct gcc ttt gaa gtc agt ctt cag gct ctt cag	7902
Leu Gly Thr Met Pro Ala Phe Glu Val Ser Leu Gln Ala Leu Gln	
2595 2600 2605	
aaa gct acc ttc cag aca cct gat ttt ata gtc ccc cta aca gat	7947
Lys Ala Thr Phe Gln Thr Pro Asp Phe Ile Val Pro Leu Thr Asp	
2610 2615 2620	
ttg agg att cca tca gtt cag ata aac ttc aaa gac tta aaa aat	7992
Leu Arg Ile Pro Ser Val Gln Ile Asn Phe Lys Asp Leu Lys Asn	
2625 2630 2635	
ata aaa atc cca tcc agg ttt tcc aca cca gaa ttt acc atc ctt	8037

Ile Lys	Ile Pro Ser Arg Phe	Ser Thr Pro Glu Phe	Thr Ile Leu	
2640	2645	2650		
aac acc	ttc cac att cct tcc	ttt aca att gac ttt	gta gaa atg	8082
Asn Thr	Phe His Ile Pro Ser	Phe Thr Ile Asp Phe	Val Glu Met	
2655	2660	2665		
aaa gta	aag atc atc aga acc	att gac cag atg ctg	aac agt gag	8127
Lys Val	Lys Ile Ile Arg Thr	Ile Asp Gln Met Leu	Asn Ser Glu	
2670	2675	2680		
ctg cag	tgg ccc gtt cca gat	ata tat ctc agg gat	ctg aag gtg	8172
Leu Gln	Trp Pro Val Pro Asp	Ile Tyr Leu Arg Asp	Leu Lys Val	
2685	2690	2695		
gag gac	att cct cta gcg aga	atc acc ctg cca gac	ttc cgt tta	8217
Glu Asp	Ile Pro Leu Ala Arg	Ile Thr Leu Pro Asp	Phe Arg Leu	
2700	2705	2710		
cca gaa	atc gca att cca gaa	ttc ata atc cca act	ctc aac ctt	8262
Pro Glu	Ile Ala Ile Pro Glu	Phe Ile Ile Pro Thr	Leu Asn Leu	
2715	2720	2725		
aat gat	ttt caa gtt cct gac	ctt cac ata cca gaa	ttc cag ctt	8307
Asn Asp	Phe Gln Val Pro Asp	Leu His Ile Pro Glu	Phe Gln Leu	
2730	2735	2740		
ccc cac	atc tca cac aca att	gaa gta cct act ttt	ggc aag cta	8352
Pro His	Ile Ser His Thr Ile	Glu Val Pro Thr Phe	Gly Lys Leu	
2745	2750	2755		
tac agt	att ctg aaa atc caa	tct cct ctt ttc aca	tta gat gca	8397
Tyr Ser	Ile Leu Lys Ile Gln	Ser Pro Leu Phe Thr	Leu Asp Ala	
2760	2765	2770		
aat gct	gac ata ggg aat gga	acc acc tca gca aac	gaa gca ggt	8442
Asn Ala	Asp Ile Gly Asn Gly	Thr Thr Ser Ala Asn	Glu Ala Gly	
2775	2780	2785		
atc gca	gct tcc atc act gcc	aaa gga gag tcc aaa	tta gaa gtt	8487
Ile Ala	Ala Ser Ile Thr Ala	Lys Gly Glu Ser Lys	Leu Glu Val	
2790	2795	2800		
ctc aat	ttt gat ttt caa gca	aat gca caa ctc tca	aac cct aag	8532
Leu Asn	Phe Asp Phe Gln Ala	Asn Ala Gln Leu Ser	Asn Pro Lys	
2805	2810	2815		
att aat	ccg ctg gct ctg aag	gag tca gtg aag ttc	tcc agc aag	8577
Ile Asn	Pro Leu Ala Leu Lys	Glu Ser Val Lys Phe	Ser Ser Lys	
2820	2825	2830		
tac ctg	aga acg gag cat ggg	agt gaa atg ctg ttt	ttt gga aat	8622
Tyr Leu	Arg Thr Glu His Gly	Ser Glu Met Leu Phe	Phe Gly Asn	
2835	2840	2845		
gct att	gag gga aaa tca aac	aca gtg gca agt tta	cac aca gaa	8667
Ala Ile	Glu Gly Lys Ser Asn	Thr Val Ala Ser Leu	His Thr Glu	
2850	2855	2860		
aaa aat	aca ctg gag ctt agt	aat gga gtg att gtc	aag ata aac	8712

Lys	Asn	Thr	Leu	Glu	Leu	Ser	Asn	Gly	Val	Ile	Val	Lys	Ile	Asn	
2865						2870					2875				
aac	cag	ctt	acc	ctg	gat	agc	aac	act	aaa	tac	ttc	cac	aaa	ttg	8757
Asn	Gln	Leu	Thr	Leu	Asp	Ser	Asn	Thr	Lys	Tyr	Phe	His	Lys	Leu	
2880						2885					2890				
aac	atc	ccc	aaa	ctg	gac	ttc	tct	agt	cag	gct	gac	ctg	cgc	aac	8802
Asn	Ile	Pro	Lys	Leu	Asp	Phe	Ser	Ser	Gln	Ala	Asp	Leu	Arg	Asn	
2895						2900					2905				
gag	atc	aag	aca	ctg	ttg	aaa	gct	ggc	cac	ata	gca	tgg	act	tct	8847
Glu	Ile	Lys	Thr	Leu	Leu	Lys	Ala	Gly	His	Ile	Ala	Trp	Thr	Ser	
2910						2915					2920				
tct	gga	aaa	ggg	tca	tgg	aaa	tgg	gcc	tgc	ccc	aga	ttc	tca	gat	8892
Ser	Gly	Lys	Gly	Ser	Trp	Lys	Trp	Ala	Cys	Pro	Arg	Phe	Ser	Asp	
2925						2930					2935				
gag	gga	aca	cat	gaa	tca	caa	att	agt	ttc	acc	ata	gaa	gga	ccc	8937
Glu	Gly	Thr	His	Glu	Ser	Gln	Ile	Ser	Phe	Thr	Ile	Glu	Gly	Pro	
2940						2945					2950				
ctc	act	tcc	ttt	gga	ctg	tcc	aat	aag	atc	aat	agc	aaa	cac	cta	8982
Leu	Thr	Ser	Phe	Gly	Leu	Ser	Asn	Lys	Ile	Asn	Ser	Lys	His	Leu	
2955						2960					2965				
aga	gta	aac	caa	aac	ttg	gtt	tat	gaa	tct	ggc	tcc	ctc	aac	ttt	9027
Arg	Val	Asn	Gln	Asn	Leu	Val	Tyr	Glu	Ser	Gly	Ser	Leu	Asn	Phe	
2970						2975					2980				
tct	aaa	ctt	gaa	att	caa	tca	caa	gtc	gat	tcc	cag	cat	gtg	ggc	9072
Ser	Lys	Leu	Glu	Ile	Gln	Ser	Gln	Val	Asp	Ser	Gln	His	Val	Gly	
2985						2990					2995				
cac	agt	gtt	cta	act	gct	aaa	ggc	atg	gca	ctg	ttt	gga	gaa	ggg	9117
His	Ser	Val	Leu	Thr	Ala	Lys	Gly	Met	Ala	Leu	Phe	Gly	Glu	Gly	
3000						3005					3010				
aag	gca	gag	ttt	act	ggg	agg	cat	gat	gct	cat	tta	aat	gga	aag	9162
Lys	Ala	Glu	Phe	Thr	Gly	Arg	His	Asp	Ala	His	Leu	Asn	Gly	Lys	
3015						3020					3025				
gtt	att	gga	act	ttg	aaa	aat	tct	ctt	ttc	ttt	tca	gcc	cag	cca	9207
Val	Ile	Gly	Thr	Leu	Lys	Asn	Ser	Leu	Phe	Phe	Ser	Ala	Gln	Pro	
3030						3035					3040				
ttt	gag	atc	acg	gca	tcc	aca	aac	aat	gaa	ggg	aat	ttg	aaa	gtt	9252
Phe	Glu	Ile	Thr	Ala	Ser	Thr	Asn	Asn	Glu	Gly	Asn	Leu	Lys	Val	
3045						3050					3055				
cgt	ttt	cca	tta	agg	tta	aca	ggg	aag	ata	gac	ttc	ctg	aat	aac	9297
Arg	Phe	Pro	Leu	Arg	Leu	Thr	Gly	Lys	Ile	Asp	Phe	Leu	Asn	Asn	
3060						3065					3070				
tat	gca	ctg	ttt	ctg	agt	ccc	agt	gcc	cag	caa	gca	agt	tgg	caa	9342
Tyr	Ala	Leu	Phe	Leu	Ser	Pro	Ser	Ala	Gln	Gln	Ala	Ser	Trp	Gln	
3075						3080					3085				
gta	agt	gct	agg	ttc	aat	cag	tat	aag	tac	aac	caa	aat	ttc	tct	9387

Val	Ser	Ala	Arg	Phe	Asn	Gln	Tyr	Lys	Tyr	Asn	Gln	Asn	Phe	Ser	
3090						3095					3100				
gct	gga	aac	aac	gag	aac	att	atg	gag	gcc	cat	gta	gga	ata	aat	9432
Ala	Gly	Asn	Asn	Glu	Asn	Ile	Met	Glu	Ala	His	Val	Gly	Ile	Asn	
3105						3110					3115				
gga	gaa	gca	aat	ctg	gat	ttc	tta	aac	att	cct	tta	aca	att	cct	9477
Gly	Glu	Ala	Asn	Leu	Asp	Phe	Leu	Asn	Ile	Pro	Leu	Thr	Ile	Pro	
3120						3125					3130				
gaa	atg	cgt	cta	cct	tac	aca	ata	atc	aca	act	cct	cca	ctg	aaa	9522
Glu	Met	Arg	Leu	Pro	Tyr	Thr	Ile	Ile	Thr	Thr	Pro	Pro	Leu	Lys	
3135						3140					3145				
gat	ttc	tct	cta	tgg	gaa	aaa	aca	ggc	ttg	aag	gaa	ttc	ttg	aaa	9567
Asp	Phe	Ser	Leu	Trp	Glu	Lys	Thr	Gly	Leu	Lys	Glu	Phe	Leu	Lys	
3150						3155					3160				
acg	aca	aag	caa	tca	ttt	gat	tta	agt	gta	aaa	gct	cag	tat	aag	9612
Thr	Thr	Lys	Gln	Ser	Phe	Asp	Leu	Ser	Val	Lys	Ala	Gln	Tyr	Lys	
3165						3170					3175				
aaa	aac	aaa	cac	agg	cat	tcc	atc	aca	aat	cct	ttg	gct	gtg	ctt	9657
Lys	Asn	Lys	His	Arg	His	Ser	Ile	Thr	Asn	Pro	Leu	Ala	Val	Leu	
3180						3185					3190				
tgt	gag	ttt	atc	agt	cag	agc	atc	aaa	tcc	ttt	gac	agg	cat	ttt	9702
Cys	Glu	Phe	Ile	Ser	Gln	Ser	Ile	Lys	Ser	Phe	Asp	Arg	His	Phe	
3195						3200					3205				
gaa	aaa	aac	aga	aac	aat	gca	tta	gat	ttt	gtc	acc	aaa	tcc	tat	9747
Glu	Lys	Asn	Arg	Asn	Asn	Ala	Leu	Asp	Phe	Val	Thr	Lys	Ser	Tyr	
3210						3215					3220				
aat	gaa	aca	aaa	att	aag	ttt	gat	aag	tac	aaa	gct	gaa	aaa	tct	9792
Asn	Glu	Thr	Lys	Ile	Lys	Phe	Asp	Lys	Tyr	Lys	Ala	Glu	Lys	Ser	
3225						3230					3235				
cac	gac	gag	ctc	ccc	agg	acc	ttt	caa	att	cct	gga	tac	act	gtt	9837
His	Asp	Glu	Leu	Pro	Arg	Thr	Phe	Gln	Ile	Pro	Gly	Tyr	Thr	Val	
3240						3245					3250				
cca	gtt	gtc	aat	gtt	gaa	gtg	tct	cca	ttc	acc	ata	gag	atg	tcg	9882
Pro	Val	Val	Asn	Val	Glu	Val	Ser	Pro	Phe	Thr	Ile	Glu	Met	Ser	
3255						3260					3265				
gca	ttc	ggc	tat	gtg	ttc	cca	aaa	gca	gtc	agc	atg	cct	agt	ttc	9927
Ala	Phe	Gly	Tyr	Val	Phe	Pro	Lys	Ala	Val	Ser	Met	Pro	Ser	Phe	
3270						3275					3280				
tcc	atc	cta	ggt	tct	gac	gtc	cgt	gtg	cct	tca	tac	aca	tta	atc	9972
Ser	Ile	Leu	Gly	Ser	Asp	Val	Arg	Val	Pro	Ser	Tyr	Thr	Leu	Ile	
3285						3290					3295				
ctg	cca	tca	tta	gag	ctg	cca	gtc	ctt	cat	gtc	cct	aga	aat	ctc	10017
Leu	Pro	Ser	Leu	Glu	Leu	Pro	Val	Leu	His	Val	Pro	Arg	Asn	Leu	
3300						3305					3310				
aag	ctt	tct	ctt	cca	gat	ttc	aag	gaa	ttg	tgt	acc	ata	agc	cat	10062

Asp Asp	Ile Trp Asn Leu Glu	Val Lys Glu Asn Phe	Ala Gly Glu	
3540	3545	3550		
gcc aca	ctc caa cgc ata tat	tcc ctc tgg gag cac	agt acg aaa	10782
Ala Thr	Leu Gln Arg Ile Tyr	Ser Leu Trp Glu His	Ser Thr Lys	
3555	3560	3565		
aac cac	tta cag cta gag ggc	ctc ttt ttc acc aac	gga gaa cat	10827
Asn His	Leu Gln Leu Glu Gly	Leu Phe Phe Thr Asn	Gly Glu His	
3570	3575	3580		
aca agc	aaa gcc acc ctg gaa	ctc tct cca tgg caa	atg tca gct	10872
Thr Ser	Lys Ala Thr Leu Glu	Leu Ser Pro Trp Gln	Met Ser Ala	
3585	3590	3595		
ctt gtt	cag gtc cat gca agt	cag ccc agt tcc ttc	cat gat ttc	10917
Leu Val	Gln Val His Ala Ser	Gln Pro Ser Ser Phe	His Asp Phe	
3600	3605	3610		
cct gac	ctt ggc cag gaa gtg	gcc ctg aat gct aac	act aag aac	10962
Pro Asp	Leu Gly Gln Glu Val	Ala Leu Asn Ala Asn	Thr Lys Asn	
3615	3620	3625		
cag aag	atc aga tgg aaa aat	gaa gtc cgg att cat	tct ggg tct	11007
Gln Lys	Ile Arg Trp Lys Asn	Glu Val Arg Ile His	Ser Gly Ser	
3630	3635	3640		
ttc cag	agc cag gtc gag ctt	tcc aat gac caa gaa	aag gca cac	11052
Phe Gln	Ser Gln Val Glu Leu	Ser Asn Asp Gln Glu	Lys Ala His	
3645	3650	3655		
ctt gac	att gca gga tcc tta	gaa gga cac cta agg	ttc ctc aaa	11097
Leu Asp	Ile Ala Gly Ser Leu	Glu Gly His Leu Arg	Phe Leu Lys	
3660	3665	3670		
aat atc	atc cta cca gtc tat	gac aag agc tta tgg	gat ttc cta	11142
Asn Ile	Ile Leu Pro Val Tyr	Asp Lys Ser Leu Trp	Asp Phe Leu	
3675	3680	3685		
aag ctg	gat gta acc acc agc	att ggt agg aga cag	cat ctt cgt	11187
Lys Leu	Asp Val Thr Thr Ser	Ile Gly Arg Arg Gln	His Leu Arg	
3690	3695	3700		
gtt tca	act gcc ttt gtg tac	acc aaa aac ccc aat	ggc tat tca	11232
Val Ser	Thr Ala Phe Val Tyr	Thr Lys Asn Pro Asn	Gly Tyr Ser	
3705	3710	3715		
ttc tcc	atc cct gta aaa gtt	ttg gct gat aaa ttc	att att cct	11277
Phe Ser	Ile Pro Val Lys Val	Leu Ala Asp Lys Phe	Ile Ile Pro	
3720	3725	3730		
ggg ctg	aaa cta aat gat cta	aat tca gtt ctt gtc	atg cct acg	11322
Gly Leu	Lys Leu Asn Asp Leu	Asn Ser Val Leu Val	Met Pro Thr	
3735	3740	3745		
ttc cat	gtc cca ttt aca gat	ctt cag gtt cca tcg	tgc aaa ctt	11367
Phe His	Val Pro Phe Thr Asp	Leu Gln Val Pro Ser	Cys Lys Leu	
3750	3755	3760		
gac ttc	aga gaa ata caa atc	tat aag aag ctg aga	act tca tca	11412

Asp Phe	Arg Glu	Ile Gln	Ile Tyr	Lys Lys	Leu Arg	Thr Ser	Ser	
3765			3770		3775			
ttt gcc	ctc aac	cta cca	aca ctc	ccc gag	gta aaa	ttc cct	gaa	11457
Phe Ala	Leu Asn	Leu Pro	Thr Tyr	Leu Pro	Glu Val	Lys Phe	Pro Glu	
3780			3785			3790		
gtt gat	gtg tta	aca aaa	tat tct	caa cca	gaa gac	tcc ttg	att	11502
Val Asp	Val Leu	Thr Lys	Tyr Ser	Gln Pro	Glu Asp	Ser Leu	Ile	
3795			3800		3805			
ccc ttt	ttt gag	ata acc	gtg cct	gaa tct	cag tta	act gtg	tcc	11547
Pro Phe	Phe Glu	Ile Thr	Val Pro	Glu Ser	Gln Leu	Thr Val	Ser	
3810			3815		3820			
cag ttc	acg ctt	cca aaa	agt gtt	tca gat	ggc att	gct gct	ttg	11592
Gln Phe	Thr Leu	Pro Lys	Ser Val	Ser Asp	Gly Ile	Ala Ala	Leu	
3825			3830		3835			
gat cta	aat gca	gta gcc	aac aag	atc gca	gac ttt	gag ttg	ccc	11637
Asp Leu	Asn Ala	Val Ala	Asn Lys	Ile Ala	Asp Phe	Glu Leu	Pro	
3840			3845		3850			
acc atc	atc gtg	cct gag	cag acc	att gag	att ccc	tcc att	aag	11682
Thr Ile	Ile Val	Pro Glu	Gln Thr	Ile Glu	Ile Pro	Ser Ile	Lys	
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Phe Ser	Val Pro	Ala Gly	Ile Ala	Ile Pro	Ser Phe	Gln Ala	Leu	
3870			3875		3880			
act gca	cgc ttt	gag gta	gac tct	ccc gtg	tat aat	gcc act	tg	11772
Thr Ala	Arg Phe	Glu Val	Asp Ser	Pro Val	Tyr Asn	Ala Thr	Trp	
3885			3890		3895			
agt gcc	agt ttg	aaa aac	aaa gca	gat tat	gtt gaa	aca gtc	ctg	11817
Ser Ala	Ser Leu	Lys Asn	Lys Ala	Asp Tyr	Val Glu	Thr Val	Leu	
3900			3905		3910			
gat tcc	aca tgc	agc tca	acc gta	cag ttc	cta gaa	tat gaa	ctt	11862
Asp Ser	Thr Cys	Ser Ser	Thr Val	Gln Phe	Leu Glu	Tyr Glu	Leu	
3915			3920		3925			
aat gtt	ttg gga	aca cac	aaa atc	gaa gat	ggg acg	tta gcc	tct	11907
Asn Val	Leu Gly	Thr His	Lys Ile	Glu Asp	Gly Thr	Leu Ala	Ser	
3930			3935		3940			
aag act	aaa gga	aca ttt	gca cac	cgt gac	ttc agt	gca gaa	tat	11952
Lys Thr	Lys Gly	Thr Phe	Ala His	Arg Asp	Phe Ser	Ala Glu	Tyr	
3945			3950		3955			
gaa gaa	gat ggc	aaa tat	gaa gga	ctt cag	gaa tgg	gaa gga	aaa	11997
Glu Glu	Asp Gly	Lys Tyr	Glu Gly	Leu Gln	Glu Trp	Glu Gly	Lys	
3960			3965		3970			
gcg cac	ctc aat	atc aaa	agc cca	gcg ttc	acc gat	ctc cat	ctg	12042
Ala His	Leu Asn	Ile Lys	Ser Pro	Ala Phe	Thr Asp	Leu His	Leu	
3975			3980		3985			
cgc tac	cag aaa	gac aag	aaa ggc	atc tcc	acc tca	gca gcc	tcc	12087

Glu Glu	Leu Cys Thr Met	Phe	Ile Arg Glu Val Gly	Thr Val Leu	
4215		4220	4225		
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Ser Gln	Val Tyr Ser Lys	Val	His Asn Gly Ser	Glu	Ile Leu Phe
4230		4235		4240	
tcc tat	ttc caa gac cta	gtg	att aca ctt cct	ttc	gag tta agg
Ser Tyr	Phe Gln Asp Leu	Val	Ile Thr Leu Pro	Phe	Glu Leu Arg
4245		4250		4255	
aaa cat	aaa cta ata gat	gta	atc tcg atg tat	agg	gaa ctg ttg
Lys His	Lys Leu Ile Asp	Val	Ile Ser Met Tyr	Arg	Glu Leu Leu
4260		4265		4270	
aaa gat	tta tca aaa gaa	gcc	caa gag gta ttt	aaa	gcc att cag
Lys Asp	Leu Ser Lys Glu	Ala	Gln Glu Val Phe	Lys	Ala Ile Gln
4275		4280		4285	
tct ctc	aag acc aca gag	gtg	cta cgt aat ctt	cag	gac ctt tta
Ser Leu	Lys Thr Thr Glu	Val	Leu Arg Asn Leu	Gln	Asp Leu Leu
4290		4295		4300	
caa ttc	att ttc caa cta	ata	gaa gat aac att	aaa	cag ctg aaa
Gln Phe	Ile Phe Gln Leu	Ile	Glu Asp Asn Ile	Lys	Gln Leu Lys
4305		4310		4315	
gag atg	aaa ttt act tat	ctt	att aat tat atc	caa	gat gag atc
Glu Met	Lys Phe Thr Tyr	Leu	Ile Asn Tyr Ile	Gln	Asp Glu Ile
4320		4325		4330	
aac aca	atc ttc aat gat	tat	atc cca tat gtt	ttt	aaa ttg ttg
Asn Thr	Ile Phe Asn Asp	Tyr	Ile Pro Tyr Val	Phe	Lys Leu Leu
4335		4340		4345	
aaa gaa	aac cta tgc ctt	aat	ctt cat aag ttc	aat	gaa ttt att
Lys Glu	Asn Leu Cys Leu	Asn	Leu His Lys Phe	Asn	Glu Phe Ile
4350		4355		4360	
caa aac	gag ctt cag gaa	gct	tct caa gag tta	cag	cag atc cat
Gln Asn	Glu Leu Gln Glu	Ala	Ser Gln Glu Leu	Gln	Gln Ile His
4365		4370		4375	
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Gln Tyr	Ile Met Ala Leu	Arg	Glu Glu Tyr Phe	Asp	Pro Ser Ile
4380		4385		4390	
gtt ggc	tgg aca gtg aaa	tat	tat gaa ctt gaa	gaa	aag ata gtc
Val Gly	Trp Thr Val Lys	Tyr	Tyr Glu Leu Glu	Glu	Lys Ile Val
4395		4400		4405	
agt ctg	atc aag aac ctg	tta	gtt gct ctt aag	gac	ttc cat tct
Ser Leu	Ile Lys Asn Leu	Leu	Val Ala Leu Lys	Asp	Phe His Ser
4410		4415		4420	
gaa tat	att gtc agt gcc	tct	aac ttt act tcc	caa	ctc tca agt
Glu Tyr	Ile Val Ser Ala	Ser	Asn Phe Thr Ser	Gln	Leu Ser Ser
4425		4430		4435	
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Gln Val Glu Gln Phe Leu His Arg Asn Ile Gln Glu Tyr Leu Ser
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 Ile Leu Thr Asp Pro Asp Gly Lys Gly Lys Glu Lys Ile Ala Glu
 4455 4460 4465
 ctt tct gcc act gct cag gaa ata att aaa agc cag gcc att gcg 13527
 Leu Ser Ala Thr Ala Gln Glu Ile Ile Lys Ser Gln Ala Ile Ala
 4470 4475 4480
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 Thr Lys Lys Ile Ile Ser Asp Tyr His Gln Gln Phe Arg Tyr Lys
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 ctg caa gat ttt tca gac caa ctc tct gat tac tat gaa aaa ttt 13617
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 4500 4505 4510
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 Ile Ala Glu Ser Lys Arg Leu Ile Asp Leu Ser Ile Gln Asn Tyr
 4515 4520 4525
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 His Thr Phe Leu Ile Tyr Ile Thr Glu Leu Leu Lys Lys Leu Gln
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 Leu Thr Ile Ile Leu
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Met Asp Pro Pro Arg Pro Ala Leu Leu Ala Leu Leu Ala Leu Pro Ala
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Leu Leu Leu Leu Leu Leu Ala Gly Ala Arg Ala Glu Glu Glu Met Leu
 20 25 30

Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala Thr Arg Phe Lys His
 35 40 45

Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr Gln Thr Leu Lys Leu
275 280 285

Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys Asp Gln Glu Val Leu
530 535 540

Leu Gln Thr Phe Leu Asp Asp Ala Ser Pro Gly Asp Lys Arg Leu Ala
545 550 555 560

Ala Tyr Leu Met Leu Met Arg Ser Pro Ser Gln Ala Asp Ile Asn Lys
565 570 575

Ile Val Gln Ile Leu Pro Trp Glu Gln Asn Glu Gln Val Lys Asn Phe
580 585 590

Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser Glu Glu Leu Asp Ile
595 600 605

Gln Asp Leu Lys Lys Leu Val Lys Glu Val Leu Lys Glu Ser Gln Leu
610 615 620

Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg Asn Tyr Gln Leu Tyr
625 630 635 640

Lys Ser Val Ser Ile Pro Ser Leu Asp Pro Ala Ser Ala Lys Ile Glu
645 650 655

Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu Pro Lys Glu Ser Met
660 665 670

Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala Ser Ala Asp Leu Ile
675 680 685

Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro Thr Leu Glu Ala Leu
690 695 700

Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val Asn Lys Ala Leu Tyr
705 710 715 720

Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser Lys Val Leu Val Asp
725 730 735

His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu Gln Asp Met Val Asn
740 745 750

Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys Asp Leu Lys Ser Lys
755 760 765

Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile Leu Gly Glu Glu Leu
 770 775 780

Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu Gly Lys Leu Leu Leu
 785 790 795 800

Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln Met Ile Gly Glu Val
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Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu His Tyr Ile Phe Met
 820 825 830

Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly Leu Gln Leu Gln Ile
 835 840 845

Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys Ala Gly Val Lys Leu
 850 855 860

Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala Lys Pro Ser Val Ser
 865 870 875 880

Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile Pro Asp Phe Ala Arg
 885 890 895

Ser Gly Val Gln Met Asn Thr Asn Phe Phe His Glu Ser Gly Leu Glu
 900 905 910

Ala His Val Ala Leu Lys Pro Gly Lys Leu Lys Phe Ile Ile Pro Ser
 915 920 925

Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly Asn Thr Leu His Leu
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Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro Leu Ile Glu Asn Arg
 945 950 955 960

Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro Gly Leu Asn Tyr Cys
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Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr Asp Ser Ala Ser Tyr
 980 985 990

Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu Glu Leu Arg Pro Thr
 995 1000 1005

Gly Glu Ile Glu Gln Tyr Ser Val Ser Ala Thr Tyr Glu Leu Gln
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 Arg Glu Asp Arg Ala Leu Val Asp Thr Leu Lys Phe Val Thr Gln
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 1055 1060 1065
 Phe Asp Val Asp Leu Gly Thr Ile Leu Arg Val Asn Asp Glu Ser
 1070 1075 1080
 Thr Glu Gly Lys Thr Ser Tyr Arg Leu Thr Leu Asp Ile Gln Asn
 1085 1090 1095
 Lys Lys Ile Thr Glu Val Ala Leu Met Gly His Leu Ser Cys Asp
 1100 1105 1110
 Thr Lys Glu Glu Arg Lys Ile Lys Gly Val Ile Ser Ile Pro Arg
 1115 1120 1125
 Leu Gln Ala Glu Ala Arg Ser Glu Ile Leu Ala His Trp Ser Pro
 1130 1135 1140
 Ala Lys Leu Leu Leu Gln Met Asp Ser Ser Ala Thr Ala Tyr Gly
 1145 1150 1155
 Ser Thr Val Ser Lys Arg Val Ala Trp His Tyr Asp Glu Glu Lys
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 Ile Glu Phe Glu Trp Asn Thr Gly Thr Asn Val Asp Thr Lys Lys
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 Leu His Met Tyr Ala Asn Arg Leu Leu Asp His Arg Val Pro Gln
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 Thr Asp Met Thr Phe Arg His Val Gly Ser Lys Leu Ile Val Ala
 1220 1225 1230

Met	Ser	Ser	Trp	Leu	Gln	Lys	Ala	Ser	Gly	Ser	Leu	Pro	Tyr	Thr
1235						1240					1245			
Gln	Thr	Leu	Gln	Asp	His	Leu	Asn	Ser	Leu	Lys	Glu	Phe	Asn	Leu
1250						1255					1260			
Gln	Asn	Met	Gly	Leu	Pro	Asp	Phe	His	Ile	Pro	Glu	Asn	Leu	Phe
1265						1270					1275			
Leu	Lys	Ser	Asp	Gly	Arg	Val	Lys	Tyr	Thr	Leu	Asn	Lys	Asn	Ser
1280						1285					1290			
Leu	Lys	Ile	Glu	Ile	Pro	Leu	Pro	Phe	Gly	Gly	Lys	Ser	Ser	Arg
1295						1300					1305			
Asp	Leu	Lys	Met	Leu	Glu	Thr	Val	Arg	Thr	Pro	Ala	Leu	His	Phe
1310						1315					1320			
Lys	Ser	Val	Gly	Phe	His	Leu	Pro	Ser	Arg	Glu	Phe	Gln	Val	Pro
1325						1330					1335			
Thr	Phe	Thr	Ile	Pro	Lys	Leu	Tyr	Gln	Leu	Gln	Val	Pro	Leu	Leu
1340						1345					1350			
Gly	Val	Leu	Asp	Leu	Ser	Thr	Asn	Val	Tyr	Ser	Asn	Leu	Tyr	Asn
1355						1360					1365			
Trp	Ser	Ala	Ser	Tyr	Ser	Gly	Gly	Asn	Thr	Ser	Thr	Asp	His	Phe
1370						1375					1380			
Ser	Leu	Arg	Ala	Arg	Tyr	His	Met	Lys	Ala	Asp	Ser	Val	Val	Asp
1385						1390					1395			
Leu	Leu	Ser	Tyr	Asn	Val	Gln	Gly	Ser	Gly	Glu	Thr	Thr	Tyr	Asp
1400						1405					1410			
His	Lys	Asn	Thr	Phe	Thr	Leu	Ser	Cys	Asp	Gly	Ser	Leu	Arg	His
1415						1420					1425			
Lys	Phe	Leu	Asp	Ser	Asn	Ile	Lys	Phe	Ser	His	Val	Glu	Lys	Leu
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Gly	Asn	Asn	Pro	Val	Ser	Lys	Gly	Leu	Leu	Ile	Phe	Asp	Ala	Ser
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Ser	Ser	Trp	Gly	Pro	Gln	Met	Ser	Ala	Ser	Val	His	Leu	Asp	Ser
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1475						1480					1485			
Gln	Phe	Arg	Val	Ser	Ser	Phe	Tyr	Ala	Lys	Gly	Thr	Tyr	Gly	Leu
1490						1495					1500			
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Asn	Leu	Arg	Phe	Asn	Ser	Ser	Tyr	Leu	Gln	Gly	Thr	Asn	Gln	Ile
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Thr	Gly	Arg	Tyr	Glu	Asp	Gly	Thr	Leu	Ser	Leu	Thr	Ser	Thr	Ser
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1580						1585					1590			
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1610						1615					1620			
Leu	Glu	Leu	Asn	Ala	Asp	Ile	Leu	Gly	Thr	Asp	Lys	Ile	Asn	Ser
1625						1630					1635			
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1640						1645					1650			
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Leu Thr Thr Asn Gly Arg Phe Arg Glu His Asn Ala Lys Phe Ser
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Leu Asp Gly Lys Ala Ala Leu Thr Glu Leu Ser Leu Gly Ser Ala
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Tyr Gln Ala Met Ile Leu Gly Val Asp Ser Lys Asn Ile Phe Asn
1715 1720 1725

Phe Lys Val Ser Gln Glu Gly Leu Lys Leu Ser Asn Asp Met Met
1730 1735 1740

Gly Ser Tyr Ala Glu Met Lys Phe Asp His Thr Asn Ser Leu Asn
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Ile Ala Gly Leu Ser Leu Asp Phe Ser Ser Lys Leu Asp Asn Ile
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Tyr Ser Ser Asp Lys Phe Tyr Lys Gln Thr Val Asn Leu Gln Leu
1775 1780 1785

Gln Pro Tyr Ser Leu Val Thr Thr Leu Asn Ser Asp Leu Lys Tyr
1790 1795 1800

Asn Ala Leu Asp Leu Thr Asn Asn Gly Lys Leu Arg Leu Glu Pro
1805 1810 1815

Leu Lys Leu His Val Ala Gly Asn Leu Lys Gly Ala Tyr Gln Asn
 1820 1825 1830

Asn Glu Ile Lys His Ile Tyr Ala Ile Ser Ser Ala Ala Leu Ser
1835 1840 1845

Ala Ser Tyr Lys Ala Asp Thr Val Ala Lys Val Gln Gly Val Glu
1850 1855 1860

Phe Ser His Arg Leu Asn Thr Asp Ile Ala Gly Leu Ala Ser Ala
1865 1870 1875

Ile Asp Met Ser Thr Asn Tyr Asn Ser Asp Ser Leu His Phe Ser
1880 1885 1890

Asn Val Phe Arg Ser Val Met Ala Pro Phe Thr Met Thr Ile Asp
1895 1900 1905

Ala His 1910	Thr Asn Gly Asn Gly 1915	Lys Leu Ala Leu Trp 1920	Gly Glu His
Thr Gly 1925	Gln Leu Tyr Ser Lys 1930	Phe Leu Leu Lys Ala 1935	Glu Pro Leu
Ala Phe 1940	Thr Phe Ser His Asp 1945	Tyr Lys Gly Ser Thr 1950	Ser His His
Leu Val 1955	Ser Arg Lys Ser Ile 1960	Ser Ala Ala Leu Glu 1965	His Lys Val
Ser Ala 1970	Leu Leu Thr Pro Ala 1975	Glu Gln Thr Gly Thr 1980	Trp Lys Leu
Lys Thr 1985	Gln Phe Asn Asn Asn 1990	Glu Tyr Ser Gln Asp 1995	Leu Asp Ala
Tyr Asn 2000	Thr Lys Asp Lys Ile 2005	Gly Val Glu Leu Thr 2010	Gly Arg Thr
Leu Ala 2015	Asp Leu Thr Leu Leu 2020	Asp Ser Pro Ile Lys 2025	Val Pro Leu
Leu Leu 2030	Ser Glu Pro Ile Asn 2035	Ile Ile Asp Ala Leu 2040	Glu Met Arg
Asp Ala 2045	Val Glu Lys Pro Gln 2050	Glu Phe Thr Ile Val 2055	Ala Phe Val
Lys Tyr 2060	Asp Lys Asn Gln Asp 2065	Val His Ser Ile Asn 2070	Leu Pro Phe
Phe Glu 2075	Thr Leu Gln Glu Tyr 2080	Phe Glu Arg Asn Arg 2085	Gln Thr Ile
Ile Val 2090	Val Leu Glu Asn Val 2095	Gln Arg Asn Leu Lys 2100	His Ile Asn
Ile Asp 2105	Gln Phe Val Arg Lys 2110	Tyr Arg Ala Ala Leu 2115	Gly Lys Leu
Pro Gln 2120	Gln Ala Asn Asp Tyr 2125	Leu Asn Ser Phe Asn 2130	Trp Glu Arg

Asp Lys Leu Val Glu Leu Ala His Gln Tyr Lys Leu Lys Glu Thr
2360 2365 2370

Ile Gln Lys Leu Ser Asn Val Leu Gln Gln Val Lys Ile Lys Asp
2375 2380 2385

Tyr Phe Glu Lys Leu Val Gly Phe Ile Asp Asp Ala Val Lys Lys
2390 2395 2400

Leu Asn Glu Leu Ser Phe Lys Thr Phe Ile Glu Asp Val Asn Lys
2405 2410 2415

Phe Leu Asp Met Leu Ile Lys Lys Leu Lys Ser Phe Asp Tyr His
2420 2425 2430

Gln Phe Val Asp Glu Thr Asn Asp Lys Ile Arg Glu Val Thr Gln
2435 2440 2445

Arg Leu Asn Gly Glu Ile Gln Ala Leu Glu Leu Pro Gln Lys Ala
2450 2455 2460

Glu Ala Leu Lys Leu Phe Leu Glu Glu Thr Lys Ala Thr Val Ala
2465 2470 2475

Val Tyr Leu Glu Ser Leu Gln Asp Thr Lys Ile Thr Leu Ile Ile
2480 2485 2490

Asn Trp Leu Gln Glu Ala Leu Ser Ser Ala Ser Leu Ala His Met
2495 2500 2505

Lys Ala Lys Phe Arg Glu Thr Leu Glu Asp Thr Arg Asp Arg Met
2510 2515 2520

Tyr Gln Met Asp Ile Gln Gln Glu Leu Gln Arg Tyr Leu Ser Leu
2525 2530 2535

Val Gly Gln Val Tyr Ser Thr Leu Val Thr Tyr Ile Ser Asp Trp
2540 2545 2550

Trp Thr Leu Ala Ala Lys Asn Leu Thr Asp Phe Ala Glu Gln Tyr
2555 2560 2565

Ser Ile Gln Asp Trp Ala Lys Arg Met Lys Ala Leu Val Glu Gln
2570 2575 2580

Gly	Phe	Thr	Val	Pro	Glu	Ile	Lys	Thr	Ile	Leu	Gly	Thr	Met	Pro
2585						2590					2595			
Ala	Phe	Glu	Val	Ser	Leu	Gln	Ala	Leu	Gln	Lys	Ala	Thr	Phe	Gln
2600						2605					2610			
Thr	Pro	Asp	Phe	Ile	Val	Pro	Leu	Thr	Asp	Leu	Arg	Ile	Pro	Ser
2615						2620					2625			
Val	Gln	Ile	Asn	Phe	Lys	Asp	Leu	Lys	Asn	Ile	Lys	Ile	Pro	Ser
2630						2635					2640			
Arg	Phe	Ser	Thr	Pro	Glu	Phe	Thr	Ile	Leu	Asn	Thr	Phe	His	Ile
2645						2650					2655			
Pro	Ser	Phe	Thr	Ile	Asp	Phe	Val	Glu	Met	Lys	Val	Lys	Ile	Ile
2660						2665					2670			
Arg	Thr	Ile	Asp	Gln	Met	Leu	Asn	Ser	Glu	Leu	Gln	Trp	Pro	Val
2675						2680					2685			
Pro	Asp	Ile	Tyr	Leu	Arg	Asp	Leu	Lys	Val	Glu	Asp	Ile	Pro	Leu
2690						2695					2700			
Ala	Arg	Ile	Thr	Leu	Pro	Asp	Phe	Arg	Leu	Pro	Glu	Ile	Ala	Ile
2705						2710					2715			
Pro	Glu	Phe	Ile	Ile	Pro	Thr	Leu	Asn	Leu	Asn	Asp	Phe	Gln	Val
2720						2725					2730			
Pro	Asp	Leu	His	Ile	Pro	Glu	Phe	Gln	Leu	Pro	His	Ile	Ser	His
2735						2740					2745			
Thr	Ile	Glu	Val	Pro	Thr	Phe	Gly	Lys	Leu	Tyr	Ser	Ile	Leu	Lys
2750						2755					2760			
Ile	Gln	Ser	Pro	Leu	Phe	Thr	Leu	Asp	Ala	Asn	Ala	Asp	Ile	Gly
2765						2770					2775			
Asn	Gly	Thr	Thr	Ser	Ala	Asn	Glu	Ala	Gly	Ile	Ala	Ala	Ser	Ile
2780						2785					2790			
Thr	Ala	Lys	Gly	Glu	Ser	Lys	Leu	Glu	Val	Leu	Asn	Phe	Asp	Phe
2795						2800					2805			

Gln Ala	Asn Ala	Gln Leu	Ser	Asn Pro	Lys Ile	Asn	Pro Leu	Ala	
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Leu Lys	Glu Ser	Val Lys	Phe	Ser Ser	Lys Tyr	Leu	Arg Thr	Glu	
2825			2830			2835			
His Gly	Ser Glu	Met Leu	Phe	Phe Gly	Asn Ala	Ile	Glu Gly	Lys	
2840			2845			2850			
Ser Asn	Thr Val	Ala Ser	Leu	His Thr	Glu Lys	Asn	Thr Leu	Glu	
2855			2860			2865			
Leu Ser	Asn Gly	Val Ile	Val	Lys Ile	Asn Asn	Gln	Leu Thr	Leu	
2870			2875			2880			
Asp Ser	Asn Thr	Lys Tyr	Phe	His Lys	Leu Asn	Ile	Pro Lys	Leu	
2885			2890			2895			
Asp Phe	Ser Ser	Gln Ala	Asp	Leu Arg	Asn Glu	Ile	Lys Thr	Leu	
2900			2905			2910			
Leu Lys	Ala Gly	His Ile	Ala	Trp Thr	Ser Ser	Gly	Lys Gly	Ser	
2915			2920			2925			
Trp Lys	Trp Ala	Cys Pro	Arg	Phe Ser	Asp Glu	Gly	Thr His	Glu	
2930			2935			2940			
Ser Gln	Ile Ser	Phe Thr	Ile	Glu Gly	Pro Leu	Thr	Ser Phe	Gly	
2945			2950			2955			
Leu Ser	Asn Lys	Ile Asn	Ser	Lys His	Leu Arg	Val	Asn Gln	Asn	
2960			2965			2970			
Leu Val	Tyr Glu	Ser Gly	Ser	Leu Asn	Phe Ser	Lys	Leu Glu	Ile	
2975			2980			2985			
Gln Ser	Gln Val	Asp Ser	Gln	His Val	Gly His	Ser	Val Leu	Thr	
2990			2995			3000			
Ala Lys	Gly Met	Ala Leu	Phe	Gly Glu	Gly Lys	Ala	Glu Phe	Thr	
3005			3010			3015			
Gly Arg	His Asp	Ala His	Leu	Asn Gly	Lys Val	Ile	Gly Thr	Leu	
3020			3025			3030			

Lys Asn Ser Leu Phe Phe Ser Ala Gln Pro Phe Glu Ile Thr Ala
 3035 3040 3045
 Ser Thr Asn Asn Glu Gly Asn Leu Lys Val Arg Phe Pro Leu Arg
 3050 3055 3060
 Leu Thr Gly Lys Ile Asp Phe Leu Asn Asn Tyr Ala Leu Phe Leu
 3065 3070 3075
 Ser Pro Ser Ala Gln Gln Ala Ser Trp Gln Val Ser Ala Arg Phe
 3080 3085 3090
 Asn Gln Tyr Lys Tyr Asn Gln Asn Phe Ser Ala Gly Asn Asn Glu
 3095 3100 3105
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 3110 3115 3120
 Asp Phe Leu Asn Ile Pro Leu Thr Ile Pro Glu Met Arg Leu Pro
 3125 3130 3135
 Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys Asp Phe Ser Leu Trp
 3140 3145 3150
 Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys Thr Thr Lys Gln Ser
 3155 3160 3165
 Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys Lys Asn Lys His Arg
 3170 3175 3180
 His Ser Ile Thr Asn Pro Leu Ala Val Leu Cys Glu Phe Ile Ser
 3185 3190 3195
 Gln Ser Ile Lys Ser Phe Asp Arg His Phe Glu Lys Asn Arg Asn
 3200 3205 3210
 Asn Ala Leu Asp Phe Val Thr Lys Ser Tyr Asn Glu Thr Lys Ile
 3215 3220 3225
 Lys Phe Asp Lys Tyr Lys Ala Glu Lys Ser His Asp Glu Leu Pro
 3230 3235 3240
 Arg Thr Phe Gln Ile Pro Gly Tyr Thr Val Pro Val Val Asn Val
 3245 3250 3255

Glu Val	Ser Pro Phe Thr	Ile	Glu Met Ser Ala	Phe	Gly Tyr Val
3260		3265		3270	
Phe Pro	Lys Ala Val Ser	Met	Pro Ser Phe Ser	Ile	Leu Gly Ser
3275		3280		3285	
Asp Val	Arg Val Pro Ser	Tyr	Thr Leu Ile Leu	Pro	Ser Leu Glu
3290		3295		3300	
Leu Pro	Val Leu His Val	Pro	Arg Asn Leu Lys	Leu	Ser Leu Pro
3305		3310		3315	
Asp Phe	Lys Glu Leu Cys	Thr	Ile Ser His Ile	Phe	Ile Pro Ala
3320		3325		3330	
Met Gly	Asn Ile Thr Tyr	Asp	Phe Ser Phe Lys	Ser	Ser Val Ile
3335		3340		3345	
Thr Leu	Asn Thr Asn Ala	Glu	Leu Phe Asn Gln	Ser	Asp Ile Val
3350		3355		3360	
Ala His	Leu Leu Ser Ser	Ser	Ser Ser Val Ile	Asp	Ala Leu Gln
3365		3370		3375	
Tyr Lys	Leu Glu Gly Thr	Thr	Arg Leu Thr Arg	Lys	Arg Gly Leu
3380		3385		3390	
Lys Leu	Ala Thr Ala Leu	Ser	Leu Ser Asn Lys	Phe	Val Glu Gly
3395		3400		3405	
Ser His	Asn Ser Thr Val	Ser	Leu Thr Thr Lys	Asn	Met Glu Val
3410		3415		3420	
Ser Val	Ala Thr Thr Thr	Lys	Ala Gln Ile Pro	Ile	Leu Arg Met
3425		3430		3435	
Asn Phe	Lys Gln Glu Leu	Asn	Gly Asn Thr Lys	Ser	Lys Pro Thr
3440		3445		3450	
Val Ser	Ser Ser Met Glu	Phe	Lys Tyr Asp Phe	Asn	Ser Ser Met
3455		3460		3465	
Leu Tyr	Ser Thr Ala Lys	Gly	Ala Val Asp His	Lys	Leu Ser Leu
3470		3475		3480	

Glu Ser	Leu Thr	Ser Tyr	Phe	Ser Ile	Glu Ser	Ser	Thr Lys	Gly	
3485			3490			3495			
Asp Val	Lys Gly	Ser Val	Leu	Ser Arg	Glu Tyr	Ser	Gly Thr	Ile	
3500			3505			3510			
Ala Ser	Glu Ala	Asn Thr	Tyr	Leu Asn	Ser Lys	Ser	Thr Arg	Ser	
3515			3520			3525			
Ser Val	Lys Leu	Gln Gly	Thr	Ser Lys	Ile Asp	Asp	Ile Trp	Asn	
3530			3535			3540			
Leu Glu	Val Lys	Glu Asn	Phe	Ala Gly	Glu Ala	Thr	Leu Gln	Arg	
3545			3550			3555			
Ile Tyr	Ser Leu	Trp Glu	His	Ser Thr	Lys Asn	His	Leu Gln	Leu	
3560			3565			3570			
Glu Gly	Leu Phe	Phe Thr	Asn	Gly Glu	His Thr	Ser	Lys Ala	Thr	
3575			3580			3585			
Leu Glu	Leu Ser	Pro Trp	Gln	Met Ser	Ala Leu	Val	Gln Val	His	
3590			3595			3600			
Ala Ser	Gln Pro	Ser Ser	Phe	His Asp	Phe Pro	Asp	Leu Gly	Gln	
3605			3610			3615			
Glu Val	Ala Leu	Asn Ala	Asn	Thr Lys	Asn Gln	Lys	Ile Arg	Trp	
3620			3625			3630			
Lys Asn	Glu Val	Arg Ile	His	Ser Gly	Ser Phe	Gln	Ser Gln	Val	
3635			3640			3645			
Glu Leu	Ser Asn	Asp Gln	Glu	Lys Ala	His Leu	Asp	Ile Ala	Gly	
3650			3655			3660			
Ser Leu	Glu Gly	His Leu	Arg	Phe Leu	Lys Asn	Ile	Ile Leu	Pro	
3665			3670			3675			
Val Tyr	Asp Lys	Ser Leu	Trp	Asp Phe	Leu Lys	Leu	Asp Val	Thr	
3680			3685			3690			
Thr Ser	Ile Gly	Arg Arg	Gln	His Leu	Arg Val	Ser	Thr Ala	Phe	
3695			3700			3705			

Val Tyr Thr Lys Asn Pro Asn Gly Tyr Ser Phe Ser Ile Pro Val	3710	3715	3720
Lys Val Leu Ala Asp Lys Phe Ile Ile Pro Gly Leu Lys Leu Asn	3725	3730	3735
Asp Leu Asn Ser Val Leu Val Met Pro Thr Phe His Val Pro Phe	3740	3745	3750
Thr Asp Leu Gln Val Pro Ser Cys Lys Leu Asp Phe Arg Glu Ile	3755	3760	3765
Gln Ile Tyr Lys Lys Leu Arg Thr Ser Ser Phe Ala Leu Asn Leu	3770	3775	3780
Pro Thr Leu Pro Glu Val Lys Phe Pro Glu Val Asp Val Leu Thr	3785	3790	3795
Lys Tyr Ser Gln Pro Glu Asp Ser Leu Ile Pro Phe Phe Glu Ile	3800	3805	3810
Thr Val Pro Glu Ser Gln Leu Thr Val Ser Gln Phe Thr Leu Pro	3815	3820	3825
Lys Ser Val Ser Asp Gly Ile Ala Ala Leu Asp Leu Asn Ala Val	3830	3835	3840
Ala Asn Lys Ile Ala Asp Phe Glu Leu Pro Thr Ile Ile Val Pro	3845	3850	3855
Glu Gln Thr Ile Glu Ile Pro Ser Ile Lys Phe Ser Val Pro Ala	3860	3865	3870
Gly Ile Ala Ile Pro Ser Phe Gln Ala Leu Thr Ala Arg Phe Glu	3875	3880	3885
Val Asp Ser Pro Val Tyr Asn Ala Thr Trp Ser Ala Ser Leu Lys	3890	3895	3900
Asn Lys Ala Asp Tyr Val Glu Thr Val Leu Asp Ser Thr Cys Ser	3905	3910	3915
Ser Thr Val Gln Phe Leu Glu Tyr Glu Leu Asn Val Leu Gly Thr	3920	3925	3930

His	Lys	Ile	Glu	Asp	Gly	Thr	Leu	Ala	Ser	Lys	Thr	Lys	Gly	Thr
3935						3940					3945			
Phe	Ala	His	Arg	Asp	Phe	Ser	Ala	Glu	Tyr	Glu	Glu	Asp	Gly	Lys
3950						3955					3960			
Tyr	Glu	Gly	Leu	Gln	Glu	Trp	Glu	Gly	Lys	Ala	His	Leu	Asn	Ile
3965						3970					3975			
Lys	Ser	Pro	Ala	Phe	Thr	Asp	Leu	His	Leu	Arg	Tyr	Gln	Lys	Asp
3980						3985					3990			
Lys	Lys	Gly	Ile	Ser	Thr	Ser	Ala	Ala	Ser	Pro	Ala	Val	Gly	Thr
3995						4000					4005			
Val	Gly	Met	Asp	Met	Asp	Glu	Asp	Asp	Asp	Phe	Ser	Lys	Trp	Asn
4010						4015					4020			
Phe	Tyr	Tyr	Ser	Pro	Gln	Ser	Ser	Pro	Asp	Lys	Lys	Leu	Thr	Ile
4025						4030					4035			
Phe	Lys	Thr	Glu	Leu	Arg	Val	Arg	Glu	Ser	Asp	Glu	Glu	Thr	Gln
4040						4045					4050			
Ile	Lys	Val	Asn	Trp	Glu	Glu	Glu	Ala	Ala	Ser	Gly	Leu	Leu	Thr
4055						4060					4065			
Ser	Leu	Lys	Asp	Asn	Val	Pro	Lys	Ala	Thr	Gly	Val	Leu	Tyr	Asp
4070						4075					4080			
Tyr	Val	Asn	Lys	Tyr	His	Trp	Glu	His	Thr	Gly	Leu	Thr	Leu	Arg
4085						4090					4095			
Glu	Val	Ser	Ser	Lys	Leu	Arg	Arg	Asn	Leu	Gln	Asp	His	Ala	Glu
4100						4105					4110			
Trp	Val	Tyr	Gln	Gly	Ala	Ile	Arg	Glu	Ile	Asp	Asp	Ile	Asp	Glu
4115						4120					4125			
Arg	Phe	Gln	Lys	Gly	Ala	Ser	Gly	Thr	Thr	Gly	Thr	Tyr	Gln	Glu
4130						4135					4140			
Trp	Lys	Asp	Lys	Ala	Gln	Asn	Leu	Tyr	Gln	Glu	Leu	Leu	Thr	Gln
4145						4150					4155			

Glu Gly	Gln Ala Ser Phe	Gln Gly Leu Lys Asp	Asn Val Phe Asp
4160		4165	4170
Gly Leu	Val Arg Val Thr	Gln Glu Phe His Met	Lys Val Lys His
4175		4180	4185
Leu Ile	Asp Ser Leu Ile	Asp Phe Leu Asn Phe	Pro Arg Phe Gln
4190		4195	4200
Phe Pro	Gly Lys Pro Gly	Ile Tyr Thr Arg Glu	Glu Leu Cys Thr
4205		4210	4215
Met Phe	Ile Arg Glu Val	Gly Thr Val Leu Ser	Gln Val Tyr Ser
4220		4225	4230
Lys Val	His Asn Gly Ser	Glu Ile Leu Phe Ser	Tyr Phe Gln Asp
4235		4240	4245
Leu Val	Ile Thr Leu Pro	Phe Glu Leu Arg Lys	His Lys Leu Ile
4250		4255	4260
Asp Val	Ile Ser Met Tyr	Arg Glu Leu Leu Lys	Asp Leu Ser Lys
4265		4270	4275
Glu Ala	Gln Glu Val Phe	Lys Ala Ile Gln Ser	Leu Lys Thr Thr
4280		4285	4290
Glu Val	Leu Arg Asn Leu	Gln Asp Leu Leu Gln	Phe Ile Phe Gln
4295		4300	4305
Leu Ile	Glu Asp Asn Ile	Lys Gln Leu Lys Glu	Met Lys Phe Thr
4310		4315	4320
Tyr Leu	Ile Asn Tyr Ile	Gln Asp Glu Ile Asn	Thr Ile Phe Asn
4325		4330	4335
Asp Tyr	Ile Pro Tyr Val	Phe Lys Leu Leu Lys	Glu Asn Leu Cys
4340		4345	4350
Leu Asn	Leu His Lys Phe	Asn Glu Phe Ile Gln	Asn Glu Leu Gln
4355		4360	4365
Glu Ala	Ser Gln Glu Leu	Gln Gln Ile His Gln	Tyr Ile Met Ala
4370		4375	4380

09751708 030102

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ggt Gly	cgc Arg 50	ttt Phe	tgg Trp	gat Asp	tac Tyr	ctg Leu 55	cgc Arg	tgg Trp	gtg Val	cag Gln	aca Thr 60	ctg Leu	tct Ser	gag Glu	cag Gln	252
gtg Val 65	cag Gln	gag Glu	gag Glu	ctg Leu	ctc Leu 70	agc Ser	tcc Ser	cag Gln	gtc Val	acc Thr 75	cag Gln	gaa Glu	ctg Leu	agg Arg	gcg Ala 80	300
ctg Leu	atg Met	gac Asp	gag Glu	acc Thr 85	atg Met	aag Lys	gag Glu	ttg Leu 90	aag Lys	gcc Ala	tac Tyr	aaa Lys	tcg Ser	gaa Glu 95	ctg Leu	348
gag Glu	gaa Glu	caa Gln	ctg Leu 100	acc Thr	ccg Pro	gtg Val	gcg Ala	gag Glu 105	gag Glu	acg Thr	cgg Arg	gca Ala	cgg Arg 110	ctg Leu	tcc Ser	396
aag Lys	gag Glu	ctg Leu 115	cag Gln	gcg Ala	gcg Ala	cag Gln	gcc Ala 120	cgg Arg	ctg Leu	ggc Gly	gcg Ala	gac Asp 125	atg Met	gag Glu	gac Asp	444
gtg Val	tgc Cys 130	ggc Gly	cgc Arg	ctg Leu	gtg Val	cag Gln 135	tac Tyr	cgc Arg	ggc Gly	gag Glu	gtg Val 140	cag Gln	gcc Ala	atg Met	ctc Leu	492
ggc Gly 145	cag Gln	agc Ser	acc Thr	gag Glu	gag Glu 150	ctg Leu	cgg Arg	gtg Val	cgc Arg	ctc Leu 155	gcc Ala	tcc Ser	cac His	ctg Leu	cgc Arg 160	540
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ctg Leu	gca Ala	gtg Val	tac Tyr 180	cag Gln	gcc Ala	ggg Gly	gcc Ala	cgc Arg 185	gag Glu	ggc Gly	gcc Ala	gag Glu	cgc Arg 190	ggc Gly	ctc Leu	636
agc Ser	gcc Ala	atc Ile 195	cgc Arg	gag Glu	cgc Arg	ctg Leu	ggg Gly 200	ccc Pro	ctg Leu	gtg Val	gaa Glu	cag Gln	ggc Gly 205	cgc Arg	gtg Val	684
cgg Arg	gcc Ala 210	gcc Ala	act Thr	gtg Val	ggc Gly	tcc Ser 215	ctg Leu	gcc Ala	ggc Gly	cag Gln	ccg Pro 220	cta Leu	cag Gln	gag Glu	cgg Arg	732
gcc Ala 225	cag Gln	gcc Ala	tgg Trp	ggc Gly	gag Glu 230	cgg Arg	ctg Leu	cgc Arg	gcg Ala	cgg Arg 235	atg Met	gag Glu	gag Glu	atg Met	ggc Gly 240	780
agc Ser	cgg Arg	acc Thr	cgc Arg	gac Asp 245	cgc Arg	ctg Leu	gac Asp	gag Glu	gtg Val 250	aag Lys	gag Glu	cag Gln	gtg Val	gcg Ala 255	gag Glu	828
gtg Val	cgc Arg	gcc Ala	aag Lys	ctg Leu	gag Glu	gag Glu	cag Gln	gcc Ala	cag Gln	cag Gln	ata Ile	cgc Arg	ctg Leu	cag Gln	gcc Ala	876

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Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
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Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu
35 40 45

Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln
50 55 60

Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala
65 70 75 80

Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu
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Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser
100 105 110

Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
115 120 125

Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
130 135 140

Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg

145 150 155 160

Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg
165 170 175

Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
180 185 190

Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
195 200 205

Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg
210 215 220

Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly
225 230 235 240

Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu
245 250 255

Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala
260 265 270

Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu
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Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala
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Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
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Val Arg Ala Leu Ser Ile Val Leu Pro Ile Ala Thr Glu Leu Gly Leu
20 25 30

tgg tct cgg ggg cag ctg tgt gac aga gcg tgc ctc tcc cta cgg tgc 143
Trp Ser Arg Gly Gln Leu Cys Asp Arg Ala Cys Leu Ser Leu Arg Cys
35 40 45

tcc tcg tct tcc ttt gcc tgg ggg tct tcc ttc tat gga aga act ggc 191

Ser Ser Ser Ser Phe Ala Trp Gly Ser Ser Phe Tyr Gly Arg Thr Gly
 50 55 60
 ggc tta aga aca tca aca gca tca act ttg aca acc ccg tct atc aga 239
 Gly Leu Arg Thr Ser Thr Ala Ser Thr Leu Thr Thr Pro Ser Ile Arg
 65 70 75
 aga cca cag agg atg agg tcc aca ttt gcc aca acc agg acg gct aca 287
 Arg Pro Gln Arg Met Arg Ser Thr Phe Ala Thr Thr Arg Thr Ala Thr
 80 85 90 95
 gct acc cct cga gac aga tgg tca gtc tgg agg atg acg tgg cgt gaa 335
 Ala Thr Pro Arg Asp Arg Trp Ser Val Trp Arg Met Thr Trp Arg Glu
 100 105 110
 cat ctg cct gga gtc ccg ccc ctg ccc aga acc ctt cct gag acc tcg 383
 His Leu Pro Gly Val Pro Pro Leu Pro Arg Thr Leu Pro Glu Thr Ser
 115 120 125
 ccg gcc ttg ttt tat tca aag aca gag aag acc aaa gca ttg cct gcc 431
 Pro Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala
 130 135 140
 aga gct ttg ttt tat ata ttt att cat ctg gga ggc aga aca ggc ttc 479
 Arg Ala Leu Phe Tyr Ile Phe Ile His Leu Gly Gly Arg Thr Gly Phe
 145 150 155
 gga cag tgc cca tgc aat ggc ttg ggt tgg gat ttt ggt ttc ttc ctt 527
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 tcc tgt gaa gga taa 542
 Ser Cys Glu Gly

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Arg Ala Leu Ser Ile Val Leu Pro Ile Ala Thr Glu Leu Gly Leu Trp
 20 25 30

Ser Arg Gly Gln Leu Cys Asp Arg Ala Cys Leu Ser Leu Arg Cys Ser
 35 40 45

Ser Ser Ser Phe Ala Trp Gly Ser Ser Phe Tyr Gly Arg Thr Gly Gly
 50 55 60

Leu Arg Thr Ser Thr Ala Ser Thr Leu Thr Thr Pro Ser Ile Arg Arg
 65 70 75 80

Pro Gln Arg Met Arg Ser Thr Phe Ala Thr Thr Arg Thr Ala Thr Ala
 85 90 95

Thr Pro Arg Asp Arg Trp Ser Val Trp Arg Met Thr Trp Arg Glu His
 100 105 110

Leu Pro Gly Val Pro Pro Leu Pro Arg Thr Leu Pro Glu Thr Ser Pro
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Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala Arg
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Ala Leu Phe Tyr Ile Phe Ile His Leu Gly Gly Arg Thr Gly Phe Gly
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Cys Glu Gly

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 Gly Gln His Val Cys Val Ala Ser Ser Pro Ser Ala Glu Leu Gln Cys
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 Cys Ala Gly Trp Arg Gln Lys Asp Gln Glu Cys Thr Ile Pro Ile Cys
 45 50 55

gag ggg ccg gac gcc tgc cag aaa gac gag gtg tgt gtg aag ccg ggc 245
 Glu Gly Pro Asp Ala Cys Gln Lys Asp Glu Val Cys Val Lys Pro Gly
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ctc tgt cga tgc aag cct gga ttc ttt ggg gcc cac tgc agc tcc cgc 293
 Leu Cys Arg Cys Lys Pro Gly Phe Phe Gly Ala His Cys Ser Ser Arg
 75 80 85

tgc ccg ggc cag tac tgg ggc ccc gac tgc cgt gag agc tgc ccc tgc 341
 Cys Pro Gly Gln Tyr Trp Gly Pro Asp Cys Arg Glu Ser Cys Pro Cys
 90 95 100 105

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 His Pro His Gly Gln Cys Glu Pro Ala Thr Gly Ala Cys Gln Cys Gln

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Glu	Gln	Asp	Ser	Gly	Arg	Cys	Ala	Cys	Arg	Pro	Gly	Trp	Trp	Gly	Pro					
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cga	cat	ggg	gag	gcc	tgt	gag	cca	gat	act	ggc	cac	tgt	cag	cgc	tgt	1013				
Arg	His	Gly	Glu	Ala	Cys	Glu	Pro	Asp	Thr	Gly	His	Cys	Gln	Arg	Cys					
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gac	cct	ggc	tgg	ctg	ggg	ccc	agg	tgt	gaa	gac	ccc	tgc	ccc	act	ggt	1061				
Asp	Pro	Gly	Trp	Leu	Gly	Pro	Arg	Cys	Glu	Asp	Pro	Cys	Pro	Thr	Gly					
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acc	ttt	ggg	gaa	gac	tgt	ggc	tct	acc	tgc	ccc	acc	tgt	gtt	cag	ggg	1109				
Thr	Phe	Gly	Glu	Asp	Cys	Gly	Ser	Thr	Cys	Pro	Thr	Cys	Val	Gln	Gly					

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Leu	Thr	Ser	Leu	Gly	Ser	Thr	Leu	Pro	Cys	Arg	Ser	Leu	Ser	Ser	His					
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aag	cta	ccc	tgg	gtg	aca	gtc	tca	cat	cac	gac	ccg	gag	gtc	ccc	ttc		1541			
Lys	Leu	Pro	Trp	Val	Thr	Val	Ser	His	His	Asp	Pro	Glu	Val	Pro	Phe					
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Tyr	Cys	Val	Pro	Pro	Gln	Glu	Gly	Met	Val	Pro	Val	Ala	Gln	Ala	Gly					
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gcc	tcc	acg	cca	ttc	gcc	atc	ccg	cgc	acc	tcc	agc	cta	gct	cgg	gcc		1781			
Ala	Ser	Thr	Pro	Phe	Ala	Ile	Pro	Arg	Thr	Ser	Ser	Leu	Ala	Arg	Ala					
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830

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35 40 45

Asp Gln Glu Cys Thr Ile Pro Ile Cys Glu Gly Pro Asp Ala Cys Gln
50 55 60

Lys Asp Glu Val Cys Val Lys Pro Gly Leu Cys Arg Cys Lys Pro Gly
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Phe Phe Gly Ala His Cys Ser Ser Arg Cys Pro Gly Gln Tyr Trp Gly
85 90 95

Pro Asp Cys Arg Glu Ser Cys Pro Cys His Pro His Gly Gln Cys Glu

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Thr Gly Val Cys His Cys Glu Pro Gly Trp Trp Ser Ser Thr Cys Arg		
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Arg Pro Cys Gln Cys Asn Thr Ala Ala Ala Arg Cys Glu Gln Ala Thr		
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Gly Ala Cys Val Cys Lys Pro Gly Trp Trp Gly Arg Arg Cys Ser Phe		
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Arg Cys Asn Cys His Gly Ser Pro Cys Glu Gln Asp Ser Gly Arg Cys		
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Ala Cys Arg Pro Gly Trp Trp Gly Pro Glu Cys Gln Gln Gln Cys Glu		
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Cys Val Arg Gly Arg Cys Ser Ala Ala Ser Gly Glu Cys Thr Cys Pro		
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His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu		
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Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp		
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Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu		
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Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu		
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Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro		
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Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly		

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Asp Cys Val Cys Ser Ala Gly Tyr Trp Gly Pro Ser Cys Asn Ala Ser		
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385	390	395
Pro Glu Gly Leu Cys His Pro Val Ser Gly Ser Cys Gln Pro Gly Ser		
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Leu Leu Phe Leu Gly Leu Ala Cys Cys Ala Cys Cys Cys Trp Ala Pro		
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Arg Ser Asp Leu Lys Asp Arg Pro Ala Arg Asp Gly Ala Thr Val Ser		
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Arg Met Lys Leu Gln Val Trp Gly Thr Leu Thr Ser Leu Gly Ser Thr		
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Leu Pro Cys Arg Ser Leu Ser Ser His Lys Leu Pro Trp Val Thr Val		
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Gly Met Val Pro Val Ala Gln Ala Gly Ser Ser Glu Ala Ser Leu Ala		
545	550	555
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His	Val	Glu	Ala	Ile	Glu	Gly	Ser	Val	Gln	Glu	Ser	Ser	Gly	Pro	Val						
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Val	Arg	Ser	Val	Phe	Arg	His	Phe	Gly	Ser	Phe	Gln	Lys	Gly	Gln	Ala						
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Glu	Gln	Asp	Pro	Gln	Lys	Gln	Ala	Glu	Glu	Glu	Arg	Gln	Glu	Glu	Pro						
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Ile Cys Arg Ile Gly Cys Gln Phe Asn Tyr Gln Ala Ser Ala Thr Cys	
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Asn Ser Val Gly Ala Ser Val Ala Thr Val Val Thr Ala Asp Asn Pro	
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cga cgt tca gtg tct ttc cct att tat tgt gca agc tta gca tat gca	192
Arg Arg Ser Val Ser Phe Pro Ile Tyr Cys Ala Ser Leu Ala Tyr Ala	
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Ser Ser Lys Tyr Asn Asn Ile Ser Ser Glu Thr Val Gly Ile Ala His	
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ctg gaa cat aga caa tcc ctt gcg aaa gac ttc acg tgt tcc aat gcg	288
Leu Glu His Arg Gln Ser Leu Ala Lys Asp Phe Thr Cys Ser Asn Ala	
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Ser Gln Glu Thr Phe Gly Gln Arg Ser Phe Val Ile Leu Ala Glu Asn	
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Thr Lys Asp Thr Asp Val Met Lys Ser Ser Val Asp Asn Val Phe Arg	
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Asn Lys Asn Ser Ile Phe Tyr Gln Leu Ser Pro Phe Val Asn Ser Ala	
130 135 140	
cct cca cag cga tat gca aac ttt ttc gct gtt ctg aat aaa tgt tcc	480
Pro Pro Gln Arg Tyr Ala Asn Phe Phe Ala Val Leu Asn Lys Cys Ser	
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gaa act gca caa acg gag caa agc tct gac tat gga acg ttt tta aca	528
Glu Thr Ala Gln Thr Glu Gln Ser Ser Asp Tyr Gly Thr Phe Leu Thr	
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Lys Val Met Asn Val Thr Ser Lys Ser Gln Gln Arg Pro Asn Asp Pro	
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agt gat cct gtc aag gtc aca aat ttc ctg cct caa gca att gca gga	624
Ser Asp Pro Val Lys Val Thr Asn Phe Leu Pro Gln Ala Ile Ala Gly	
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gcg aac gcc tat tct gac att ctg ctt gtg att aat tat aac gtg tct	672

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Gln	Arg	Ser	Arg	Ileu	Tyr	Ile	Leu	Phe	Val	Gln	Thr	Tyr	Phe	Asn	Tyr	
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Leu	Pro	Thr	Ile	Gly	Glu	Leu	Gln	Leu	Phe	Thr	Leu	Ile	Pro	Glu	Lys	
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Gly	Ser	Lys	Ile	Thr	Ile	Thr	Tyr	Ser	Asp	Ala	Thr	Asn	Pro	Ala	Asn	
385					390					395					400	
cca	att	tat	aat	gga	aat	att	acg	tct	gct	tta	aat	gac	tcg	aaa	tat	1248
Pro	Ile	Tyr	Asn	Gly	Asn	Ile	Thr	Ser	Ala	Leu	Asn	Asp	Cys	Lys	Tyr	
				405					410					415		
tat	gca	aac	aca	aaa	aat	tac	gcc	tggt	gcc	tgt	agt	att	tcc	gaa	atc	1296
Tyr	Ala	Asn	Thr	Lys	Asn	Tyr	Ala	Trp	Ala	Cys	Ser	Ile		Glu	Ile	
			420					425					430			
gca	tta	tta	tta	caa	ttt	tca	atg	aga	aat	att	cag	atc	gat	aga	gtt	1344
Ala	Leu	Leu	Leu	Gln	Phe	Ser	Met	Arg	Asn	Ile	Gln	Ile	Asp	Arg	Val	
		435					440					445				
ttg	aac	ggt	gaa	acg	att	tcg	aga	acc	ttc	cca	att	act	tcg	ctt	gga	1392

Leu	Asn	Gly	Glu	Thr	Ile	Ser	Arg	Thr	Phe	Pro	Ile	Thr	Cys	Leu	Gly		
450						455					460						
gca	gat	gta	gga	gac	tgc	ctc	aac	ggg	gga	aat	cta	aca	gat	gct	ggg	1440	
Ala	Asp	Val	Gly	Asp	Cys	Leu	Asn	Gly	Gly	Asn	Leu	Thr	Asp	Ala	Gly		
465					470				475					480			
tca	tgc	att	tgc	cca	tta	cag	tgg	aca	gga	act	aac	tgt	caa	gct	ccg	1488	
Ser	Cys	Ile	Cys	Pro	Leu	Gln	Trp	Thr	Gly	Thr	Asn	Cys	Gln	Ala	Pro		
				485					490					495			
caa	tgc	ttg	aat	gga	ggg	aca	ctg	aaa	act	gat	gac	act	tgt	gca	tgt	1536	
Gln	Cys	Leu	Asn	Gly	Gly	Thr	Leu	Lys	Thr	Asp	Asp	Thr	Cys	Ala	Cys		
			500					505					510				
ctc	gat	agt	ttc	aaa	gga	gat	ttt	tgt	gaa	aca	agt	acc	tct	gtt	tgc	1584	
Leu	Asp	Ser	Phe	Lys	Gly	Asp	Phe	Cys	Glu	Thr	Ser	Thr	Ser	Val	Cys		
			515				520					525					
gct	gga	gct	ccg	aca	tct	ccg	gac	tat	cgc	tct	gaa	ctg	agt	tca	ttg	1632	
Ala	Gly	Ala	Pro	Thr	Ser	Pro	Asp	Tyr	Arg	Ser	Glu	Leu	Ser	Ser	Leu		
	530					535					540						
gta	att	gtt	gct	gat	gtc	aac	gca	tta	tca	aca	agt	agt	cta	agc	aat	1680	
Val	Ile	Val	Ala	Asp	Val	Asn	Ala	Leu	Ser	Thr	Ser	Ser	Leu	Ser	Asn		
545					550					555					560		
acg	gta	ccc	gga	ata	act	gga	gtg	cca	att	act	gtc	att	cta	tat	ggc	1728	
Thr	Val	Pro	Gly	Ile	Thr	Gly	Val	Pro	Ile	Thr	Val	Ile	Leu	Tyr	Gly		
				565					570					575			
gat	gga	aat	gct	cca	aga	att	gtt	cag	tct	aca	act	aac	agt	gag	cat	1776	
Asp	Gly	Asn	Ala	Pro	Arg	Ile	Val	Gln	Ser	Thr	Thr	Asn	Ser	Glu	His		
			580					585					590				
ctc	tcc	gag	gta	tta	ggg	gca	ccg	acg	ggg	acc	aca	act	tca	cca	agt	1824	
Leu	Ser	Glu	Val	Leu	Gly	Ala	Pro	Thr	Gly	Thr	Thr	Ser	Pro	Ser			
		595					600					605					
tca	acg	gct	tca	cca	gca	cca	tcc	gca	agt	gat	atg	tat	aag	gct	ctg	1872	
Ser	Thr	Ala	Ser	Pro	Ala	Pro	Ser	Ala	Ser	Asp	Met	Tyr	Lys	Ala	Leu		
	610					615					620						
aat	ttg	gca	ctt	gac	aat	cag	ctc	acc	gac	cgt	gca	ttt	gta	att	gta	1920	
Asn	Leu	Ala	Leu	Asp	Asn	Gln	Leu	Thr	Asp	Arg	Ala	Phe	Val	Ile	Val		
	625				630				635						640		
tac	aca	tca	aat	tcc	aat	gtc	acc	att	gat	cct	gac	ttt	ttg	atc	cgt	1968	
Tyr	Thr	Ser	Asn	Ser	Asn	Val	Thr	Ile	Asp	Pro	Asp	Phe	Leu	Ile	Arg		
				645					650					655			
ttg	gca	gtc	aga	aga	gcc	gaa	gta	cga	gtg	ttg	tca	act	tcg	gga	act	2016	
Leu	Ala	Val	Arg	Arg	Ala	Glu	Val	Arg	Val	Leu	Ser	Thr	Ser	Gly	Thr		
			660					665					670				
gaa	agt	caa	aac	tct	ata	aca	tta	tcg	cta	gtc	gga	aat	gga	att	cct	2064	
Glu	Ser	Gln	Asn	Ser	Ile	Thr	Leu	Ser	Leu	Val	Gly	Asn	Gly	Ile	Pro		
		675					680					685					
att	gcg	ata	aat	ggc	gcg	aaa	gat	ttc	gaa	aat	tac	ctg	aca	tac	tac	2112	

Ile	Ala	Ile	Asn	Gly	Ala	Lys	Asp	Phe	Glu	Asn	Tyr	Leu	Thr	Tyr	Tyr		
690						695					700						
ggt	ggt	ccc	tta	ttc	caa	tca	cta	caa	tac	caa	gtg	aac	act	cca	caa	2160	
Val	Val	Pro	Leu	Phe	Gln	Ser	Leu	Gln	Tyr	Gln	Val	Asn	Thr	Pro	Gln		
705					710					715					720		
cga	gtg	ttc	aat	gtg	ttc	caa	aca	ggt	caa	ttc	tac	aac	tct	acg	caa	2208	
Arg	Val	Phe	Asn	Val	Phe	Gln	Thr	Gly	Phe	Tyr	Asn	Ser	Thr	Gln			
				725						730				735			
att	tct	atc	cca	gca	gat	tcc	aca	ttt	gat	aac	gct	aaa	cca	aat	ctt	2256	
Ile	Ser	Ile	Pro	Ala	Asp	Ser	Thr	Phe	Asp	Asn	Ala	Lys	Pro	Asn	Leu		
			740					745					750				
ttt	gtg	cat	gtg	tac	gaa	ggt	cgc	att	aat	tat	tca	gat	cct	tca	aca	2304	
Phe	Val	His	Val	Tyr	Glu	Gly	Arg	Ile	Asn	Tyr	Ser	Asp	Pro	Ser	Thr		
		755					760					765					
aat	gga	aac	gag	gtt	ggc	aat	tct	act	ata	tac	ttt	ctc	cct	tat	gac	2352	
Asn	Gly	Asn	Glu	Val	Gly	Asn	Ser	Thr	Ile	Tyr	Phe	Leu	Pro	Tyr	Asp		
	770					775					780						
ccc	aca	aaa	cct	atc	aac	tta	att	gtg	aat	aat	aat	ggc	acg	acc	ggt	2400	
Pro	Thr	Lys	Pro	Ile	Asn	Leu	Ile	Val	Asn	Asn	Asn	Gly	Thr	Thr	Gly		
785					790					795					800		
tac	tac	gca	atc	gaa	gtc	atc	gga	tat	cta	aag	aca	tca	tat	ggt	ttc	2448	
Tyr	Tyr	Ala	Ile	Glu	Val	Ile	Gly	Tyr	Leu	Lys	Thr	Ser	Tyr	Gly	Phe		
				805					810					815			
aat	att	gat	aat	gct	aac	gga	tca	aat	gaa	aac	ctg	aac	tcg	gga	gta	2496	
Asn	Ile	Asp	Asn	Ala	Asn	Gly	Ser	Asn	Glu	Asn	Leu	Asn	Ser	Gly	Val		
			820					825					830				
gta	tat	aac	caa	caa	aac	aca	ttg	aat	atc	tat	tct	gcg	ccg	ttt	tca	2544	
Val	Tyr	Asn	Gln	Gln	Asn	Thr	Leu	Asn	Ile	Tyr	Ser	Ala	Pro	Phe	Ser		
		835					840					845					
cag	ctt	cct	aaa	act	gat	cca	tca	aac	ttc	cca	tat	ctc	aca	ctt	gga	2592	
Gln	Leu	Pro	Lys	Thr	Asp	Pro	Ser	Asn	Phe	Pro	Tyr	Leu	Thr	Leu	Gly		
	850					855					860						
gaa	att	gcc	agt	aac	gga	aca	gtt	tta	cct	gca	aca	aca	ggt	ttg	ttt	2640	
Glu	Ile	Ala	Ser	Asn	Gly	Thr	Val	Leu	Pro	Ala	Thr	Thr	Val	Leu	Phe		
865					870					875				880			
aca	aga	aaa	agt	ggc	gcg	tcc	tgt	ttt	tac	agt	cac	ttc	acc	ggt	ctt	2688	
Thr	Arg	Lys	Ser	Gly	Ala	Ser	Cys	Phe	Tyr	Ser	His	Phe	Thr	Val	Leu		
				885					890					895			
gat	gtc	tgc	tcc	caa	agc	aca	aca	att	gga	tat	cag	gca	cag	ttg	acc	2736	
Asp	Val	Cys	Ser	Gln	Ser	Thr	Thr	Ile	Gly	Tyr	Gln	Ala	Gln	Leu	Thr		
			900					905					910				
aca	aga	aca	agc	acc	ttg	aca	aat	agg	att	caa	caa	ttt	gtg	ctg	aca	2784	
Thr	Arg	Thr	Ser	Thr	Leu	Thr	Asn	Arg	Ile	Gln	Gln	Phe	Val	Leu	Thr		
		915					920					925					
tgc	ttt	aaa	aca	agt	tat	gca	aat	aat	gat	act	tcc	tgc	cat	gga	cat	2832	

Cys Phe Lys Thr Ser Tyr Ala Asn Asn Asp Thr Ser Cys His Gly His	
930 935 940	
gga tca cca atg gca acc tgt gcc tgt aat gct gac ttc gga gga att	2880
Gly Ser Pro Met Ala Thr Cys Ala Cys Asn Ala Asp Phe Gly Gly Ile	
945 950 955 960	
gat tgc act gaa ccg gct tgt gta aat gga ggt gtt cgg gat ggg tcg	2928
Asp Cys Thr Glu Pro Ala Cys Val Asn Gly Gly Val Arg Asp Gly Ser	
965 970 975	
gtt tgt cgt tgt cct gta aga ttc tat ggg ctt cga tgt gaa gaa tgt	2976
Val Cys Arg Cys Pro Val Arg Phe Tyr Gly Leu Arg Cys Glu Glu Cys	
980 985 990	
gag tct agg caa aat ctg cct ata aga aaa tta tcc aca cct aat tac	3024
Glu Ser Arg Gln Asn Leu Pro Ile Arg Lys Leu Ser Thr Pro Asn Tyr	
995 1000 1005	
gga caa att act gac aaa tta ctg gta aag aaa ttc att cag ttc	3069
Gly Gln Ile Thr Asp Lys Leu Leu Val Lys Lys Phe Ile Gln Phe	
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cct ttt gaa tca gaa cca gct tcg tct act gtc tcc gtg ata act	3114
Pro Phe Glu Ser Glu Pro Ala Ser Ser Thr Val Ser Val Ile Thr	
1025 1030 1035	
tca act act atg ctg cct tct acg tca act gtt gct cca agc aca	3159
Ser Thr Thr Met Leu Pro Ser Thr Ser Thr Val Ala Pro Ser Thr	
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agc caa tca aca ata gtt tcc act gtt act aca cag tca cca agt	3204
Ser Gln Ser Thr Ile Val Ser Thr Val Thr Thr Gln Ser Pro Ser	
1055 1060 1065	
cct tca aca aca gct cca aaa caa gtc cga gct gct gca ttc att	3249
Pro Ser Thr Thr Ala Pro Lys Gln Val Arg Ala Ala Ala Phe Ile	
1070 1075 1080	
att gac tgc atg gga act gat gat tat gct ttc aat cag aca ttc	3294
Ile Asp Cys Met Gly Thr Asp Asp Tyr Ala Phe Asn Gln Thr Phe	
1085 1090 1095	
aaa tcg att gca cag tac ttc aag aca ttt ggc tat agc cat tac	3339
Lys Ser Ile Ala Gln Tyr Phe Lys Thr Phe Gly Tyr Ser His Tyr	
1100 1105 1110	
atc atg tta acc aat aat ttg aat gga agt tta caa ttg aac aat	3384
Ile Met Leu Thr Asn Asn Leu Asn Gly Ser Leu Gln Leu Asn Asn	
1115 1120 1125	
gga agt tta cta ttt gaa gat ttc caa caa tat tca gat gag agt	3429
Gly Ser Leu Leu Phe Glu Asp Phe Gln Gln Tyr Ser Asp Glu Ser	
1130 1135 1140	
atg att atg agc aaa cta ccc ctg tat tgg agt tta aga gcc acc	3474
Met Ile Met Ser Lys Leu Pro Leu Tyr Trp Ser Leu Arg Ala Thr	
1145 1150 1155	
cca agt aga acc gct agc gtc agc aac gcg ctc agt aag att ctt	3519

Asn Ile Asn Ser Ala Asp Cys Ser Cys Asn Arg Phe Asn Asp Thr
 1385 1390 1395
 aac act gcg aag ttt atc att tgg atg cct cgt tct gca gcg ccc 4239
 Asn Thr Ala Lys Phe Ile Ile Trp Met Pro Arg Ser Ala Ala Pro
 1400 1405 1410
 gtc act gat gat gat tat tta acc ttg ctc aaa ctc aac acc aca 4284
 Val Thr Asp Asp Asp Tyr Leu Thr Leu Leu Lys Leu Asn Thr Thr
 1415 1420 1425
 aat gca tat cac ttt gtc gtt cca ttt tac gat agt gct gat aac 4329
 Asn Ala Tyr His Phe Val Val Pro Phe Tyr Asp Ser Ala Asp Asn
 1430 1435 1440
 agt acc gat ttg tac tac cag att ctt gtg aag caa gca gga ccc 4374
 Ser Thr Asp Leu Tyr Tyr Gln Ile Leu Val Lys Gln Ala Gly Pro
 1445 1450 1455
 gaa ggt ccc gat tat tat tgg tta cca aat gca gtt aat gct aca 4419
 Glu Gly Pro Asp Tyr Tyr Trp Leu Pro Asn Ala Val Asn Ala Thr
 1460 1465 1470
 aat ttg caa acg aat gta ata aat att cta tac gag aag ctt tgc 4464
 Asn Leu Gln Thr Asn Val Ile Asn Ile Leu Tyr Glu Lys Leu Cys
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 Gln Thr Ala Gly Val Asp Pro Thr Ala Ile Pro Pro
 1490 1495 1500

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 136

Met Lys Phe Ile Gly Thr Ser Gly Ser Ile Thr Leu Gly Ala Asp Ile
 1 5 10 15

Ile Cys Arg Ile Gly Cys Gln Phe Asn Tyr Gln Ala Ser Ala Thr Cys
 20 25 30

Asn Ser Val Gly Ala Ser Val Ala Thr Val Val Thr Ala Asp Asn Pro
 35 40 45

Arg Arg Ser Val Ser Phe Pro Ile Tyr Cys Ala Ser Leu Ala Tyr Ala
 50 55 60

Ser Ser Lys Tyr Asn Asn Ile Ser Ser Glu Thr Val Gly Ile Ala His
 65 70 75 80

Leu Glu His Arg Gln Ser Leu Ala Lys Asp Phe Thr Cys Ser Asn Ala
 85 90 95

Ser Gln Glu Thr Phe Gly Gln Arg Ser Phe Val Ile Leu Ala Glu Asn

100	105	110
Thr Lys Asp Thr Asp Val Met Lys Ser Ser Val Asp Asn Val Phe Arg 115 120 125		
Asn Lys Asn Ser Ile Phe Tyr Gln Leu Ser Pro Phe Val Asn Ser Ala 130 135 140		
Pro Pro Gln Arg Tyr Ala Asn Phe Phe Ala Val Leu Asn Lys Cys Ser 145 150 155 160		
Glu Thr Ala Gln Thr Glu Gln Ser Ser Asp Tyr Gly Thr Phe Leu Thr 165 170 175		
Lys Val Met Asn Val Thr Ser Lys Ser Gln Gln Arg Pro Asn Asp Pro 180 185 190		
Ser Asp Pro Val Lys Val Thr Asn Phe Leu Pro Gln Ala Ile Ala Gly 195 200 205		
Ala Asn Ala Tyr Ser Asp Ile Leu Leu Val Ile Asn Tyr Asn Val Ser 210 215 220		
Thr Ile Thr Asp Asn Asp Ala Thr Glu Ile Lys Ser Ala Leu Glu Lys 225 230 235 240		
Gln Arg Ser Arg Leu Tyr Ile Leu Phe Val Gln Thr Tyr Phe Asn Tyr 245 250 255		
Thr Asp Thr Tyr Tyr Ala Met Asn Lys Leu Ala Ile Ala Ser Gly Gly 260 265 270		
Val Ala Ile Arg Val Asn Thr Tyr Asp Asp Leu Ser Thr Phe Phe Ala 275 280 285		
Gln Tyr Phe Pro Leu Leu Val Ala Asn Asp Ile Val Ala Lys Ala Tyr 290 295 300		
Ala Glu Asn Pro Arg Pro Gly Val Ala Leu Asn Asn Val Asn Leu Leu 305 310 315 320		
Ala Gln Gln Tyr Val Leu Leu Val Thr Asn Glu Asp Ser Leu Gly Asp 325 330 335		
Gly Pro Val Pro Ala Ser Val Thr Val Thr Gly Ile Asn Val Thr Gln		

340	345	350
Leu Pro Thr Ile Gly Glu Leu Gln Leu Phe Thr Leu Ile Pro Glu Lys		
355	360	365
Ala Gly Lys Phe Thr Pro Leu Phe Tyr Ser Ser Ser Ser Phe Asp Asp		
370	375	380
Gly Ser Lys Ile Thr Ile Thr Tyr Ser Asp Ala Thr Asn Pro Ala Asn		
385	390	395 400
Pro Ile Tyr Asn Gly Asn Ile Thr Ser Ala Leu Asn Asp Cys Lys Tyr		
405	410	415
Tyr Ala Asn Thr Lys Asn Tyr Ala Trp Ala Cys Ser Ile Ser Glu Ile		
420	425	430
Ala Leu Leu Leu Gln Phe Ser Met Arg Asn Ile Gln Ile Asp Arg Val		
435	440	445
Leu Asn Gly Glu Thr Ile Ser Arg Thr Phe Pro Ile Thr Cys Leu Gly		
450	455	460
Ala Asp Val Gly Asp Cys Leu Asn Gly Gly Asn Leu Thr Asp Ala Gly		
465	470	475 480
Ser Cys Ile Cys Pro Leu Gln Trp Thr Gly Thr Asn Cys Gln Ala Pro		
485	490	495
Gln Cys Leu Asn Gly Gly Thr Leu Lys Thr Asp Asp Thr Cys Ala Cys		
500	505	510
Leu Asp Ser Phe Lys Gly Asp Phe Cys Glu Thr Ser Thr Ser Val Cys		
515	520	525
Ala Gly Ala Pro Thr Ser Pro Asp Tyr Arg Ser Glu Leu Ser Ser Leu		
530	535	540
Val Ile Val Ala Asp Val Asn Ala Leu Ser Thr Ser Ser Leu Ser Asn		
545	550	555 560
Thr Val Pro Gly Ile Thr Gly Val Pro Ile Thr Val Ile Leu Tyr Gly		
565	570	575
Asp Gly Asn Ala Pro Arg Ile Val Gln Ser Thr Thr Asn Ser Glu His		

580

585

590

Leu Ser Glu Val Leu Gly Ala Pro Thr Gly Thr Thr Thr Ser Pro Ser
595 600 605

Ser Thr Ala Ser Pro Ala Pro Ser Ala Ser Asp Met Tyr Lys Ala Leu
610 615 620

Asn Leu Ala Leu Asp Asn Gln Leu Thr Asp Arg Ala Phe Val Ile Val
625 630 635 640

Tyr Thr Ser Asn Ser Asn Val Thr Ile Asp Pro Asp Phe Leu Ile Arg
645 650 655

Leu Ala Val Arg Arg Ala Glu Val Arg Val Leu Ser Thr Ser Gly Thr
660 665 670

Glu Ser Gln Asn Ser Ile Thr Leu Ser Leu Val Gly Asn Gly Ile Pro
675 680 685

Ile Ala Ile Asn Gly Ala Lys Asp Phe Glu Asn Tyr Leu Thr Tyr Tyr
690 695 700

Val Val Pro Leu Phe Gln Ser Leu Gln Tyr Gln Val Asn Thr Pro Gln
705 710 715 720

Arg Val Phe Asn Val Phe Gln Thr Gly Gln Phe Tyr Asn Ser Thr Gln
725 730 735

Ile Ser Ile Pro Ala Asp Ser Thr Phe Asp Asn Ala Lys Pro Asn Leu
740 745 750

Phe Val His Val Tyr Glu Gly Arg Ile Asn Tyr Ser Asp Pro Ser Thr
755 760 765

Asn Gly Asn Glu Val Gly Asn Ser Thr Ile Tyr Phe Leu Pro Tyr Asp
770 775 780

Pro Thr Lys Pro Ile Asn Leu Ile Val Asn Asn Asn Gly Thr Thr Gly
785 790 795 800

Tyr Tyr Ala Ile Glu Val Ile Gly Tyr Leu Lys Thr Ser Tyr Gly Phe
805 810 815

Asn Ile Asp Asn Ala Asn Gly Ser Asn Glu Asn Leu Asn Ser Gly Val

820	825	830
Val Tyr Asn Gln Gln Asn Thr Leu Asn Ile Tyr Ser Ala Pro Phe Ser		
835	840	845
Gln Leu Pro Lys Thr Asp Pro Ser Asn Phe Pro Tyr Leu Thr Leu Gly		
850	855	860
Glu Ile Ala Ser Asn Gly Thr Val Leu Pro Ala Thr Thr Val Leu Phe		
865	870	880
Thr Arg Lys Ser Gly Ala Ser Cys Phe Tyr Ser His Phe Thr Val Leu		
885	890	895
Asp Val Cys Ser Gln Ser Thr Thr Ile Gly Tyr Gln Ala Gln Leu Thr		
900	905	910
Thr Arg Thr Ser Thr Leu Thr Asn Arg Ile Gln Gln Phe Val Leu Thr		
915	920	925
Cys Phe Lys Thr Ser Tyr Ala Asn Asn Asp Thr Ser Cys His Gly His		
930	935	940
Gly Ser Pro Met Ala Thr Cys Ala Cys Asn Ala Asp Phe Gly Gly Ile		
945	950	955
Asp Cys Thr Glu Pro Ala Cys Val Asn Gly Gly Val Arg Asp Gly Ser		
965	970	975
Val Cys Arg Cys Pro Val Arg Phe Tyr Gly Leu Arg Cys Glu Glu Cys		
980	985	990
Glu Ser Arg Gln Asn Leu Pro Ile Arg Lys Leu Ser Thr Pro Asn Tyr		
995	1000	1005
Gly Gln Ile Thr Asp Lys Leu Leu Val Lys Lys Phe Ile Gln Phe		
1010	1015	1020
Pro Phe Glu Ser Glu Pro Ala Ser Ser Thr Val Ser Val Ile Thr		
1025	1030	1035
Ser Thr Thr Met Leu Pro Ser Thr Ser Thr Val Ala Pro Ser Thr		
1040	1045	1050
Ser Gln Ser Thr Ile Val Ser Thr Val Thr Thr Gln Ser Pro Ser		

1055					1060					1065				
Pro	Ser	Thr	Thr	Ala	Pro	Lys	Gln	Val	Arg	Ala	Ala	Ala	Phe	Ile
	1070					1075					1080			
Ile	Asp	Cys	Met	Gly	Thr	Asp	Asp	Tyr	Ala	Phe	Asn	Gln	Thr	Phe
	1085					1090					1095			
Lys	Ser	Ile	Ala	Gln	Tyr	Phe	Lys	Thr	Phe	Gly	Tyr	Ser	His	Tyr
	1100					1105					1110			
Ile	Met	Leu	Thr	Asn	Asn	Leu	Asn	Gly	Ser	Leu	Gln	Leu	Asn	Asn
	1115					1120					1125			
Gly	Ser	Leu	Leu	Phe	Glu	Asp	Phe	Gln	Gln	Tyr	Ser	Asp	Glu	Ser
	1130					1135					1140			
Met	Ile	Met	Ser	Lys	Leu	Pro	Leu	Tyr	Trp	Ser	Leu	Arg	Ala	Thr
	1145					1150					1155			
Pro	Ser	Arg	Thr	Ala	Ser	Val	Ser	Asn	Ala	Leu	Ser	Lys	Ile	Leu
	1160					1165					1170			
Ala	Ser	Tyr	Asn	Arg	Asn	Gly	Thr	Glu	Phe	Lys	Asn	Ser	Val	Ser
	1175					1180					1185			
Met	Asn	Ile	Phe	Tyr	Ala	Thr	Gln	Ile	Gly	Leu	Gly	Asp	Glu	Asp
	1190					1195					1200			
Pro	Thr	Ala	Ala	Gly	Leu	Glu	Val	Phe	Asn	Lys	Ser	Ala	Ile	Val
	1205					1210					1215			
Tyr	Ser	Ala	Phe	Ala	Lys	Asn	Ala	Asn	Gln	Thr	Ile	Val	Thr	Ser
	1220					1225					1230			
Leu	Gln	Lys	Phe	Ser	Thr	Asp	Val	Thr	Thr	Ala	Arg	Asp	Tyr	Tyr
	1235					1240					1245			
Ser	Gly	Leu	Ser	Asp	Met	Tyr	Glu	Ser	Thr	Gln	Pro	Gln	Gly	Ser
	1250					1255					1260			
Asn	Glu	Leu	Pro	Pro	Lys	Pro	Asp	Gln	Leu	Ser	Cys	Val	Tyr	Gly
	1265					1270					1275			
Leu	Gln	Ser	Asn	Ile	Lys	Ile	Ala	Ile	Asp	Arg	Ser	Asn	Ser	Ser

1280		1285		1290
Asn Pro Glu Val Asn Thr Ile Met Asn Asn Phe Leu Val Asn Phe				
1295		1300		1305
Arg Leu Gly Phe Asn Tyr Ile Glu Asn Asp Asp Asn Arg Cys Gly				
1310		1315		1320
Asp Lys Leu Pro Glu Phe Tyr Thr Gly Arg Thr Ala Leu Thr Ala				
1325		1330		1335
Phe Pro Tyr Tyr Asp Ala Ile Ala Lys Ile Ala Thr Phe Cys Pro				
1340		1345		1350
Ser Gln Tyr Thr Ser Met Leu Ser Phe Gln Val Val Gly Ser Gln				
1355		1360		1365
Leu Gln Pro Asn Phe Thr Asp Lys Tyr Val Lys Val Ile Ser Lys				
1370		1375		1380
Asn Ile Asn Ser Ala Asp Cys Ser Cys Asn Arg Phe Asn Asp Thr				
1385		1390		1395
Asn Thr Ala Lys Phe Ile Ile Trp Met Pro Arg Ser Ala Ala Pro				
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Val Thr Asp Asp Asp Tyr Leu Thr Leu Leu Lys Leu Asn Thr Thr				
1415		1420		1425
Asn Ala Tyr His Phe Val Val Pro Phe Tyr Asp Ser Ala Asp Asn				
1430		1435		1440
Ser Thr Asp Leu Tyr Tyr Gln Ile Leu Val Lys Gln Ala Gly Pro				
1445		1450		1455
Glu Gly Pro Asp Tyr Tyr Trp Leu Pro Asn Ala Val Asn Ala Thr				
1460		1465		1470
Asn Leu Gln Thr Asn Val Ile Asn Ile Leu Tyr Glu Lys Leu Cys				
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Gln Thr Ala Gly Val Asp Pro Thr Ala Ile Pro Pro				
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 Ala Ala Ser His Ile Tyr Gln Asn
 1 5
 caa ttt gtt caa atg atc ctc aat tca ctt att aac aag tca aaa tct 160
 Gln Phe Val Gln Met Ile Leu Asn Ser Leu Ile Asn Lys Ser Lys Ser
 10 15 20
 tct atg ttc caa gtc aga act ttg aga gaa ctg tta tgg ggc tat agg 208
 Ser Met Phe Gln Val Arg Thr Leu Arg Glu Leu Trp Gly Tyr Arg
 25 30 35 40
 gat cca ttt ttg agt ttg gtt ccg tac cct gtt act acc aca gtt ggt 256
 Asp Pro Phe Leu Ser Leu Val Pro Tyr Pro Val Thr Thr Thr Val Gly
 45 50 55
 ctg ttt tat cct gtaagtacca aatatgaatg gcaatattat tacattttaa 308
 Leu Phe Tyr Pro
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 ttttaattaat tcaatggcat tggcaaggca taattttata atttagctca ttagctatgc 368
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Ser Leu Ile Asn Lys Ser Lys Ser Ser Met Phe Gln Val Arg Thr Leu
 20 25 30

Arg Glu Leu Leu Trp Gly Tyr Arg Asp Pro Phe Leu Ser Leu Val Pro
 35 40 45

Tyr Pro Val Thr Thr Thr Val Gly Leu Phe Tyr Pro
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 Leu Leu Leu Trp Thr Arg Gly Thr Gln Gly Ser Glu Leu Asp Pro Lys
 10 15 20 25

ggg cag cac gtc tgt gtg gcc agc agc ccc tct gct gag ctg cag tgc Gly Gln His Val Cys Val Ala Ser Ser Pro Ser Ala Glu Leu Gln Cys 30 35 40	149
tgc gca ggc tgg agg cag aag gat caa gaa tgc acc atc ccc atc tgt Cys Ala Gly Trp Arg Gln Lys Asp Gln Glu Cys Thr Ile Pro Ile Cys 45 50 55	197
gag ggg ccg gac gcc tgc cag aaa gac gag gtg tgt gtg aag ccg ggc Glu Gly Pro Asp Ala Cys Gln Lys Asp Glu Val Cys Val Lys Pro Gly 60 65 70	245
ctc tgt cga tgc aag cct gga ttc ttt ggg gcc cac tgc agc tcc cgc Leu Cys Arg Cys Lys Pro Gly Phe Phe Gly Ala His Cys Ser Ser Arg 75 80 85	293
tgc ccg ggc cag tac tgg ggc ccc gac tgc cgt gag agc tgc ccc tgc Cys Pro Gly Gln Tyr Trp Gly Pro Asp Cys Arg Glu Ser Cys Pro Cys 90 95 100 105	341
cac ccg cac ggc cag tgc gag cca gcc acg ggc gcg tgc cag tgc cag His Pro His Gly Gln Cys Glu Pro Ala Thr Gly Ala Cys Gln Cys Gln 110 115 120	389
gcc gac cgc tgg gga gcc cgc tgc gag ttc ccg tgc gcc tgc ggc ccc Ala Asp Arg Trp Gly Ala Arg Cys Glu Phe Pro Cys Ala Cys Gly Pro 125 130 135	437
cac ggg cgc tgc gac ccc gcg acc ggc gtg tgc cac tgc gaa ccc ggc His Gly Arg Cys Asp Pro Ala Thr Gly Val Cys His Cys Glu Pro Gly 140 145 150	485
tgg tgg tgc tcc acg tgc cgc cgc ccg tgc cag tgc aac acc gcg gcg Trp Trp Ser Ser Thr Cys Arg Arg Pro Cys Gln Cys Asn Thr Ala Ala 155 160 165	533
gcg cgc tgc gag cag gcc acg ggc gcc tgc gtg tgc aag ccg ggc tgg Ala Arg Cys Glu Gln Ala Thr Gly Ala Cys Val Cys Lys Pro Gly Trp 170 175 180 185	581
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gag cag gac tcc ggc cgc tgc gcc tgc cgg ccg ggc tgg tgg ggt ccc Glu Gln Asp Ser Gly Arg Cys Ala Cys Arg Pro Gly Trp Trp Gly Pro 205 210 215	677
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Ser Phe Ser Ser Asp Pro Glu Ser Gly Glu Ala Asp Glu Val Pro Ala	
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Tyr Cys Val Pro Pro Gln Glu Gly Met Val Pro Val Ala Gln Ala Gly	
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Ser Ser Glu Ala Ser Leu Ala Ala Gly Ala Phe Pro Pro Glu Asp	
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Ala Ser Thr Pro Phe Ala Ile Pro Arg Thr Ser Ser Leu Ala Arg Ala	
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Lys Arg Pro Ser Val Ser Phe Ala Glu Gly Thr Lys Phe Ala Pro Gln	
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Arg Leu Ser Arg Gly Ala Gln Ser Gly Pro Glu Gly Arg Glu Ala Glu	
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Gly Gly Arg Thr Val Ala Glu His Val Glu Ala Ile Glu Gly Ser Val	
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cag gag agc tcg ggc cct gtg acc acg atc tac atg ctg gca ggg aag	2117
Gln Glu Ser Ser Gly Pro Val Thr Thr Ile Tyr Met Leu Ala Gly Lys	
685 690 695	
ccc cgc gga tcc gaa ggc cct gtc cgc tct gtc ttc cgc cat ttt ggt	2165
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Ser Phe Gln Lys Gly Gln Ala Glu Ala Lys Val Lys Arg Ala Ile Pro	
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Lys Pro Pro Arg Gln Ala Leu Asn Arg Lys Lys Gly Ser Pro Gly Leu	
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 Leu Pro Gly Ala Thr Gly Pro Met Ala Val Arg Pro Glu Glu Ala Val
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cgg ggg ctg ggg gct ggc acc gag agt tca agg aga gcc cag gag cca 2405
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 Val Ser Gly Cys Gly Ser Pro Glu Gln Asp Pro Gln Lys Gln Ala Glu
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 810 815 820 825

agg cca cca gaa ccc tga tgaccttgaa tttggggagt ggggagagt 2549
 Arg Pro Pro Glu Pro
 830

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35 40 45

Asp Gln Glu Cys Thr Ile Pro Ile Cys Glu Gly Pro Asp Ala Cys Gln
50 55 60

Lys Asp Glu Val Cys Val Lys Pro Gly Leu Cys Arg Cys Lys Pro Gly
65 70 75 80

Phe Phe Gly Ala His Cys Ser Ser Arg Cys Pro Gly Gln Tyr Trp Gly
85 90 95

Pro Asp Cys Arg Glu Ser Cys Pro Cys His Pro His Gly Gln Cys Glu
100 105 110

Pro Ala Thr Gly Ala Cys Gln Cys Gln Ala Asp Arg Trp Gly Ala Arg
115 120 125

Cys Glu Phe Pro Cys Ala Cys Gly Pro His Gly Arg Cys Asp Pro Ala
130 135 140

Thr Gly Val Cys His Cys Glu Pro Gly Trp Trp Ser Ser Thr Cys Arg
145 150 155 160

Arg Pro Cys Gln Cys Asn Thr Ala Ala Ala Arg Cys Glu Gln Ala Thr
165 170 175

Gly Ala Cys Val Cys Lys Pro Gly Trp Trp Gly Arg Arg Cys Ser Phe
180 185 190

Arg Cys Asn Cys His Gly Ser Pro Cys Glu Gln Asp Ser Gly Arg Cys
195 200 205

Ala Cys Arg Pro Gly Trp Trp Gly Pro Glu Cys Gln Gln Gln Cys Glu
210 215 220

Cys Val Arg Gly Arg Cys Ser Ala Ala Ser Gly Glu Cys Thr Cys Pro
225 230 235 240

Pro Gly Phe Arg Gly Ala Arg Cys Glu Leu Pro Cys Pro Ala Gly Ser
245 250 255

His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu
260 265 270

Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp
275 280 285

Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu
290 295 300

Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu
305 310 315 320

Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro
325 330 335

Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly
340 345 350

Ser Thr Cys Pro Thr Cys Val Gln Gly Ser Cys Asp Thr Val Thr Gly
355 360 365

Asp Cys Val Cys Ser Ala Gly Tyr Trp Gly Pro Ser Cys Asn Ala Ser
370 375 380

Cys Pro Ala Gly Phe His Gly Asn Asn Cys Ser Val Pro Cys Glu Cys
385 390 395 400

Pro Glu Gly Leu Cys His Pro Val Ser Gly Ser Cys Gln Pro Gly Ser
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Gly Ser Arg Asp Thr Ala Leu Ile Ala Gly Ser Leu Val Pro Leu Leu
420 425 430

Leu Leu Phe Leu Gly Leu Ala Cys Cys Ala Cys Cys Cys Trp Ala Pro
435 440 445

Arg Ser Asp Leu Lys Asp Arg Pro Ala Arg Asp Gly Ala Thr Val Ser
450 455 460

Arg Met Lys Leu Gln Val Trp Gly Thr Leu Thr Ser Leu Gly Ser Thr
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Leu Pro Cys Arg Ser Leu Ser Ser His Lys Leu Pro Trp Val Thr Val
485 490 495

Ser His His Asp Pro Glu Val Pro Phe Asn His Ser Phe Ile Glu Pro
500 505 510

Pro Ser Ala Gly Trp Ala Thr Asp Asp Ser Phe Ser Ser Asp Pro Glu
515 520 525

Ser Gly Glu Ala Asp Glu Val Pro Ala Tyr Cys Val Pro Pro Gln Glu
530 535 540

Gly Met Val Pro Val Ala Gln Ala Gly Ser Ser Glu Ala Ser Leu Ala
545 550 555 560

Ala Gly Ala Phe Pro Pro Pro Glu Asp Ala Ser Thr Pro Phe Ala Ile
565 570 575

Pro Arg Thr Ser Ser Leu Ala Arg Ala Lys Arg Pro Ser Val Ser Phe
580 585 590

Ala Glu Gly Thr Lys Phe Ala Pro Gln Ser Arg Arg Ser Ser Gly Glu
595 600 605

Leu Ser Ser Pro Leu Arg Lys Pro Lys Arg Leu Ser Arg Gly Ala Gln
610 615 620

Ser Gly Pro Glu Gly Arg Glu Ala Glu Glu Ser Thr Gly Pro Glu Glu
625 630 635 640

Ala Glu Ala Pro Glu Ser Phe Pro Ala Ala Ala Ser Pro Gly Asp Ser
645 650 655

Ala Thr Gly His Arg Arg Pro Pro Leu Gly Gly Arg Thr Val Ala Glu
660 665 670

His Val Glu Ala Ile Glu Gly Ser Val Gln Glu Ser Ser Gly Pro Val
675 680 685

Thr Thr Ile Tyr Met Leu Ala Gly Lys Pro Arg Gly Ser Glu Gly Pro
690 695 700

Val Arg Ser Val Phe Arg His Phe Gly Ser Phe Gln Lys Gly Gln Ala
705 710 715 720

Glu Ala Lys Val Lys Arg Ala Ile Pro Lys Pro Pro Arg Gln Ala Leu
725 730 735

Asn Arg Lys Lys Gly Ser Pro Gly Leu Ala Ser Gly Ser Val Gly Gln
740 745 750

Ser Pro Asn Ser Ala Pro Lys Ala Gly Leu Pro Gly Ala Thr Gly Pro
755 760 765

Met Ala Val Arg Pro Glu Glu Ala Val Arg Gly Leu Gly Ala Gly Thr
770 775 780

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Gly Lys Lys Pro Lys Gly Leu His Leu Leu Ser Ser Pro Trp Trp Phe
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Pro Ala Ala Met Thr Leu Val Ile Leu Cys Leu Val Leu Ser Val Thr
40 45 50

ctt att gta cag tgg aca caa tta cgc cag gta tot gac ctc tta aaa 248
Leu Ile Val Gln Trp Thr Gln Leu Arg Gln Val Ser Asp Leu Leu Lys
55 60 65

caa tac caa gcg aac ctt act cag cag gat cgt atc ctg gaa ggg cag 296
Gln Tyr Gln Ala Asn Leu Thr Gln Gln Asp Arg Ile Leu Glu Gly Gln
70 75 80

atg tta gcc cag cag aag gca gaa aac gct tca cag gaa tca aag aag 344
Met Leu Ala Gln Gln Lys Ala Glu Asn Ala Ser Gln Glu Ser Lys Lys
85 90 95

gaa ctg aaa gga aag ata gac acc ctc acc cag aag ctg aat gag aaa 392
Glu Leu Lys Gly Lys Ile Asp Thr Leu Thr Gln Lys Leu Asn Glu Lys
100 105 110 115

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cag aga gct gca aac tct tca gag gag tcc cag aga gaa ctc aag gga Gln Arg Ala Ala Asn Ser Ser Glu Glu Ser Gln Arg Glu Leu Lys Gly 180 185 190 195	632
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360						
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 35 40 45

Ser Val Thr Leu Ile Val Gln Trp Thr Gln Leu Arg Gln Val Ser Asp
 50 55 60

Leu Leu Lys Gln Tyr Gln Ala Asn Leu Thr Gln Gln Asp Arg Ile Leu
 65 70 75 80

Glu Gly Gln Met Leu Ala Gln Gln Lys Ala Glu Asn Ala Ser Gln Glu
 85 90 95

Ser Lys Lys Glu Leu Lys Gly Lys Ile Asp Thr Leu Thr Gln Lys Leu
100 105 110

Asn Glu Lys Ser Lys Glu Gln Glu Glu Leu Leu Gln Lys Asn Gln Asn
115 120 125

Leu Gln Glu Ala Leu Gln Arg Ala Ala Asn Ser Ser Glu Glu Ser Gln
130 135 140

Arg Glu Leu Lys Gly Lys Ile Asp Thr Ile Thr Arg Lys Leu Asp Glu
145 150 155 160

Lys Ser Lys Glu Gln Glu Glu Leu Leu Gln Met Ile Gln Asn Leu Gln
165 170 175

Glu Ala Leu Gln Arg Ala Ala Asn Ser Ser Glu Glu Ser Gln Arg Glu
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Leu Lys Gly Lys Ile Asp Thr Leu Thr Leu Lys Leu Asn Glu Lys Ser
195 200 205

Lys Glu Gln Glu Glu Leu Leu Gln Lys Asn Gln Asn Leu Gln Glu Ala
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Trp His Lys Glu Asn Cys Tyr Leu Phe His Gly Pro Phe Ser Trp Glu
245 250 255

Lys Asn Arg Gln Thr Cys Gln Ser Leu Gly Gly Gln Leu Leu Gln Ile
260 265 270

Asn Gly Ala Asp Asp Leu Thr Phe Ile Leu Gln Ala Ile Ser His Thr
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Thr Ser Pro Phe Trp Ile Gly Leu His Arg Lys Lys Pro Gly Gln Pro
290 295 300

Trp Leu Trp Glu Asn Gly Thr Pro Leu Asn Phe Gln Phe Phe Lys Thr
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Lys Lys Ser Gln His Met Ala Ala Ala Val Asn Ile Arg Asn Cys Cys
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